DOCUMENT RESUME

ED 287 092 CE 048 659

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TITLE Sheep Production Unit for Agricultural Science I Core Curriculum. Instructor's Guide. AGDEX 430/10.
INSTITUTION Missouri Univ., Columbia. Instructional Materials Lab.
SPONS AGENCY Missouri State Dept. of Elementary and Secondary Education, Jefferson City. Div. of Vocational and Adult Education.
PUB DATE May 87
NOTE 106p.
AVAILABLE FROM Instructional Materials Laboratory, 10 Industrial Education Bldg., University of Missouri, Columbia, MO 65211 (Order No. AG-119-I).
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Agricultural Education; *Agricultural Production; *Animal Husbandry; Behavioral Objectives; Core Curriculum; Learning Activities; Lesson Plans; *Livestock; Secondary Education; Teaching Guides; *Vocational Education
IDENTIFIERS *Sheep

ABSTRACT

This instructor's guide for a sheep production unit contains six lessons that are designed to be taught in the Agricultural Science I core curriculum. Introductory materials include lists of performance objectives and competencies for the complete unit, suggestions for motivational technique/interest approach and evaluation, lists of references and materials for the unit, and a competency profile. Contents of each lesson include the objective, study questions, reference list, teaching procedures (with a content outline and answers to evaluation), and the evaluation instrument. Some lessons also contain transparency masters, handouts, and/or worksheets. Lesson topics are: the sheep industry; sheep selection; managing the breeding flock; managing the flock from lambing to weaning; managing a flock from weaning to market; and diseases, parasites, and predators. A glossary of sheep terms is provided at the end of the guide. (YLB)

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AG-119-I
AGDEX 430-10

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Sheep Production
Sheep Production
Sheep Production
Sheep Production
Unit

For
Agricultural Science I Core Curriculum
Instructor's Guide

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The activity which is the subject of this report was supported in whole or in part by funds from the Department of Elementary and Secondary Education, Division of Vocational and Adult Education. However, the opinions expressed herein do not necessarily reflect the position or policies of the Missouri Department of Elementary and Secondary Education or the Division of Vocational and Adult Education, and no official endorsement should be inferred.

Instructor's Guide

SHEEP PRODUCTION UNIT

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Volume 19
Number 6

Produced by the Instructional Materials Laboratory
University of Missouri-Columbia
Columbia, Missouri

Catalog Number AG-119-I
May 1987

ACKNOWLEDGEMENTS

A new addition to the Agricultural Science I curriculum, this Sheep Production unit was developed according to suggestions made by the MVATA Teaching Aids Committee. Recommendations for a Sheep Management Program, published by North Central Regional Extension Publications, is the student reference for this unit.

Special recognition is given to the Sheep Production Advisory Committee members for providing their valuable time and suggestions in developing this unit. The committee consisted of the following: Steve Brown, Leon Busdieker, Duane Keisler, Bob Knight, Jim Kyle, Delbert Lund, Gene Milligan and Gilbert Rhodes.

Special recognition is also due to Harley Schlichting, director of the Instructional Materials Laboratory and his staff for the typing, editing and illustrating of this unit.

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FOREWORD

Development of this Sheep Production unit was suggested by the MVATA Teaching Aids Committee. The Sheep Advisory Committee selected the topics to be included in this unit, which is designed to be taught in the Agricultural Science I core curriculum. This marks the first time that a sheep production unit has been produced for Missouri's vocational agricultural programs.

Sheep Production is divided into six lessons. The lessons are designed to introduce the student to the sheep industry; inform the student in sheep selection and management; and familiarize the student with common sheep parasites, diseases and predators. A glossary of sheep terms has been included at the back of this guide.

The student reference for this unit is Recommendations for a Sheep Management Program, published by North Central Regional Extension Publications. Student handouts were developed to supplement the reference.

During the summer of 1981, the Missouri State Board of Education formally adopted the concept of "Instructional Management Systems" (IMS) as a priority for the 1981-82 school year. Missouri Commissioner of Education Arthur L. Mallory has described the IMS concept as a practical way of "organizing for excellence" in education. To meet the demand for greater productivity and accountability, Dr. Frank Drake, Director of Vocational Education, applied the elements of IMS to form the "Vocational Instructional Management System" (VIMS). The VIMS process provides a framework to use in planning and organizing to assure excellence in Missouri's vocational educational system by focusing greater attention on the management of teaching and learning.

To aid vocational agriculture teachers in the implementation of VIMS, this guide incorporates the needed component parts to meet VIMS requirements. For ease of use, performance objectives and competencies have been included at the beginning of each unit, as well as being incorporated within each lesson. A competency profile which reflects a revision of the original Agricultural Science I profile, has also been provided for convenient recordkeeping.

There is a steadily growing interest in the sheep industry across America. Individuals are taking a serious look at sheep production as a profitable income alternative in agriculture. Producing sheep, lamb and wool represents an excellent Supervised Occupation Experience Program for students.

Bob R. Stewart, Professor and
Coordinator
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University of Missouri-Columbia

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Department of Elementary and
Secondary Education

SHEEP PRODUCTION

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AGRICULTURAL SCIENCE I

UNIT - SHEEP PRODUCTION

LESSONS

1. The Sheep Industry
2. Sheep Selection
3. Managing the Breeding Flock
4. Managing the Flock from Lambing to Weaning
5. Managing a Flock from Weaning to Market
6. Parasites, Diseases and Predators

OBJECTIVES

1. The student will identify the opportunities available in the sheep industry.
2. The student will combine production information and visual selection to choose superior sheep.
3. The student will manage a breeding flock during breeding and gestation.
4. The student will manage a flock from lambing to weaning.
5. The student will manage a flock from weaning to market.
6. The student will determine proper prevention and/or control methods of common parasites, diseases and predators.

NOTE: Percent of accuracy should be set by instructors to reflect passing grades within their school systems.

COMPETENCIES (Revised 1987)

1. Identify the opportunities available in the sheep industry.
2. Combine information and visual selection to choose superior sheep.
3. Manage a breeding flock during breeding and gestation.
4. Manage a flock from lambing to weaning.
5. Manage a flock from weaning to market.
6. Determine proper prevention and/or control methods of common parasites, diseases and predators.

MOTIVATIONAL TECHNIQUE OR INTEREST APPROACH

1. Write to the Finnsheep Breeders Association and request a large photo of a ewe with her lambs. Discuss with students why there is growing interest in this breed of sheep.

2. Bring a live sheep to school. Allow the class to gently handle the sheep, inspecting the fleece and checking the teeth and mouth. Mark off body parts with colored chalk (see lesson 2). Show the students how a sheep is flipped for hoof trimming. Demonstrate how feet are properly trimmed.

3. Bring in a sheep fitting show box and fitting table. Display the tools and supplies needed to fit a sheep for show. Display before and after photos of a sheep fitted for show.

EVALUATION

1. Give short, objective tests following each lesson and a more in-depth objective test at the conclusion of the unit.

2. Observe the changes in behavior as evidence of an improved ability of students to deal with problems in this unit using background acquired from earlier units.

3. Observe students' attempts to solve similar problems in their supervised occupational experience programs.

REFERENCES AND MATERIALS

1. Student reference

   a) Ricketts, G. E.; R. D. Scoggins; D. L. Thomas. Recommendations for a Sheep Management Program (publication 240). Ames, Iowa: North Central Regional Extension, 1986. (Available from the Instructional Materials Laboratory. Catalog number AG-1192-S)

2. Teacher reference

   a) Scott, George E. The Sheepman's Production Handbook. 3rd ed. Denver, Colorado: Sheep Industry Development Program Inc., 1977. (Available form Sheep Industry Development Program Inc. 200 Clayton Street, Denver, CO 80206)

3. Resource List

   a) Approved Practices in Sheep Production. Ohio State University, Ohio Agricultural education Curriculum Materials Service, 1982. (Available from Missouri Vocational Resource Center, 10 Industrial Education Building, Columbia, MO 65211.)

b) Bundy, Diggins and Christenson. Livestock and Poultry Production. 5th ed. Englewood Cliffs, New Jersey: Prentice-Hall Inc., 1982.

c) Gillespie, J. R. Modern Livestock and Poultry Production. Albany, New York: Delmar Publishers, 1983.

d) Handbook for Raising Small Numbers of Sheep. Davis, CA: University of California Division of Agriculture and Natural Resources, 1985.

e) Juergenson, E. M. Approved Practices in Sheep Production. Danville, Illinois: Interstate Printers and Publishers Inc., 1973.

f) Project 2000 for Agricultural Education - Sheep Production. Des Moines: Iowa Department of Public Instruction, 1982.

g) Ross, James. 4-H Market Lamb Project. Missouri Extension Service Publications, Columbia, MO 65211

h) Sheep Management Fact Sheets available from Extension Publications, Iowa State University, Ames, Iowa 50011

1) "Recommendations for Sheep Selection Programs"
2) "Managing the Replacement Ewe Lamb"
3) "Ram Lamb Management"
4) "Productivity of Ewes Bred at Six or Eight Month Intervals"
5) "Diagnosing Pregnancy in Sheep"
6) "Foot Trimming"
7) "Ewe Selection for Starting a Flock"
8) "Breeding Programs and Ram Selection for the Production of Replacement Ewes in Iowa"
9) "Sheep Identification"
10) "Recognizing and Reducing Sheep Predator Losses"
11) "Lamb Feeding Simplified"
12) "Colostrum: Is it Needed by the Newborn Lamb"
13) "Producing, Harvesting and Marketing Wool"
14) "Condition Scoring of Ewes"
15) "Ventilation Systems of Sheep Barns"

i) Sheep Production video tapes are available from the Missouri State Sheep Specialist. Request the video tapes by number and title through your county extension agent.

1) Profit in a Farm Flock
2) Baby Lamb Survival
3) Prevent Baby Lamb Starvation
4) The Sheep Management Center
5) Replacement Ewe Selection in Range Operations
6) Raising Orphan Lambs

7) Lamb Marketing
8) Feeding the Farm Flock
9) Production Records for the Farm Flock
10) Sheep Breeds in the United States
11) Confinement Housing for Sheep
12) Planning a Working Facility for Sheep
13) Harvesting Your Wool Crop
14) Polypay: A Study in Crossbreeding
15) Ram Management
16) Sheep Obstetrics
17) Training a Sheep Dog
18) Maximizing Ewe Production
19) Fencing
20) Flock Health
21) Sheep Handling and Feeding Equipment
22) Applying Health Care Practices
23) Feed and Water Delivery Systems
24) Castration, Docking and Identification
25) Determining Market Value
26) Farm Flock Production Systems
27) Personal Requirements/Personal Rewards
28) Obtaining Needed Financing

j) Sheep Shelter and Equipment Handbook. Ames, Iowa: Midwest Planning Service, 1982. (Available from Agricultural Engineering Extension, Agricultural Engineering Building, University of Missouri-Columbia, Columbia, MO 65211.)

k) "How to Shear Sheep". Sunbeam Stewart/Oster Corporation, Professional Products Division, 5055 N. Lydell Ave., Milwaukee, WI 53217

l) Wickersham, Tom; Nolan Hartwig. Sheep Flock Management Calendar (publication 221). Ames, Iowa: North Central Regional Extension Publications, 1984.

m) University of Missouri-Columbia Extension Division publications

1) G2625: Feeding Lambs (1983)
2) G2731: Producing Quality Wool (1980)

4. Addresses

a) American Wool Council
Wool Education Center
200 Clayton St.
Denver, CO 80206

b) Iowa Cooperative Extension Service
Iowa State University
Ames, Iowa 50011

c) Lincoln University
Helen Swartz
900 Moreau Drive
Jefferson City, MO 65101.

d) Mid-States Livestock Supplies
125 East 10 Avenue
South Hutchinson, KS 67505
1-800-835-9665

e) Midwest Plan Service Publications
Agricultural Engineering Extension
University of Missouri
Columbia, MO 65211
(314) 822-2731

f) NASCO Agricultural Sciences Catalog
901 Janesville Ave.
Fort Atkinson, WI 53538
1-800-558-9595

g) National Livestock and Meat Board
444 North Michigan Avenue
Chicago, IL 60611.

h) Sheep Industry Development Program
200 Clayton St.
Denver, CO 80206

i) Sheep Magazines

1) Sheep Breeder and Sheepman Magazine
P. O. Box 796
Columbia, MO 65205-9990

2) The Southeastern Sheepman
P. O. Box 345
Loganville, GA 30249

3) The Shepherd
5696 Johnston Rd.
New Washington, OH 44854

4) The National Wool Grower
8 East Broadway, Suite 415
Salt Lake City, UT 84111

5) Sheep Magazine
P. O. Box 329
Jefferson, WI 53549

6) Southern Sheep Producer
Box 277
Puryear, TN 38251

7) The Lamb Producers Journal
P. O. Box 384
Monticello, IN 47960

8) The Stock Show
P. O. Box 607
Albany, TX 76430

9) Ranch Magazine
P. O. Box 2678
San Angelo, TX 76902

10) Purple Circle Magazine
303 N. Center Ave.
Brownwood, TX 76801

11) Sheep Canada Magazine
83 Kingston Crescent
Winnipeg, Manitoba, Canada R2M OT7

12) Show Ring Magazine
P. O. Box 1399
Albany, TX 76430

j) Sheep Industry Organizations

1) American Sheep Producers Council
200 Clayton St.
Denver, Colorado 80206
(303) 399-8130

2) Missouri Sheep Producers, Inc.
914 N. Kentucky
Mexico, MO 65265
Gilbert Rhodes, Executive Director
(314) 581-6155

3) National Lamb Feeders Association
Howard Wyman, President
P.O. Box 238
Bristol, ILL 60512
(312) 552-5512

4) National Wool Growers Association
10 Lakeside Lane
Suite 200
Denver, CO 80211
(303) 455-0991

k) Breed Associations

1) American Cheviot Sheep Society
Ruth Bowles, Secretary
R. R. 1, Box 100
Clarks Hill, Indiana 47930

2) American Corriedale Association, Inc.
Russell E. Jackson, Secretary
Seneca, Illinois 61360

3) American Cotswold Record Association
Patricia Friscella, Secretary
282 Meaderboro Road
Rochester, New Hampshire 03867

4) American & Delaine Merino Record Association
Elaine A. Clouser, Secretary
1193 Township Road 346
Nova, Ohio 44859

5) American Hampshire Sheep Association
Jim Cretcher, Secretary
P. O. Box 345
Ashland, MO 65010

6) American Karakul Fur Sheep Registry
Karen Koch, Secretary
8756 Concord Road
Powell, Ohio 43065

7) American Oxford Down Record Association
Wally Watts, Secretary
Route 4
Ottawa, Illinois 61350

8) American Rambouillet Sheep Breeders Association
La Verne McDonald, Secretary
2709 Sherwood Way
San Angelo, TX 76901

9) American Romney Breeders Association
John J. Landers, Jr., Secretary
4375 Northeast Weslinn Drive
Corvallis, Oregon 97333

10) American Shropshire Registry Association
Elizabeth Glasgow, Secretary
P. O. Box 1970
Monticello, Illinois 61856

11) American Southdown Breeders Association
Florence Strouse, Secretary
Route 4, Box 14B
Bellefonte, Pennsylvania 16823

12) American Suffolk Sheep Society
VeNeal Jenkins, Secretary
55 East 100 North
Logan, Utah 84321

13) Black Top & Delaine Merino Sheep Breeders Association
Irwin Y. Hamilton, Secretary
290 Beech Street
Muse, Pennsylvania 15350

14) Columbia Sheep Breeders Association of America
Richard L. Gerber, Secretary
P. O. Box 272
Upper Sandusky, Ohio 43351

15) Continental Dorset Club
Marion Meno, Secretary
P. O. Box 577
Hudson, Iowa 50643

16) Debouillet Sheep Breeders Association
Mrs. J. R. Skeen, Secretary
300 South Kentucky Avenue
Roswell, New Mexico 88201

17) Finnsheep Breeders Association, Inc.
Claire Carter, Secretary
P. O. Box 34303
Indianapolis, Indiana 46234

18) Montadale Sheep Breeders Association
Mildred Brown, Secretary
P. O. Box 44300
Indianapolis, Indiana 46244

19) National Lincoln Sheep Breeders Association
Teresa M. Kruse, Secretary
R. R. 6, Box 24
Decatur, Illinois 62521

20) National Suffolk Sheep Association
Kathy Krafka, Secretary
P. O. Box 324
Columbia, MO 65205

21) National Tunis Sheep Registry, Inc.
Patricia J. Swartz, Secretary
1698 Nesbitt Road
Attica, New York 14011

22) Texas Delaine-Merino Record Association
Mrs. G. A. Glimp, Secretary
Route 1, Box 26
Burnet, Texas 78611

23) U. S. Targhee Sheep Association
Vicki Arnold, Secretary
Box 40
Absarokee, Montana 59001

Sheep Production
MAJOR COMPETENCY PROFILE

Directions: Evaluate the student by checking the appropriate number or letter to indicate the degree of competency. The rating for each task should reflect **employability readiness** rather than the grades given in class.

Rating Scale:
- 3 **Mastered** - can work independently with no supervision
- 2 **Requires Supervision** - can perform job completely with limited supervision
- 1 **Not Mastered** - requires instruction and close supervision
- N **No Exposure** - no experience or knowledge in this area

6-87

3	2	1	N

Sheep Production

1. Identify the opportunities available in the sheep industry. (0198 H001)
2. Combine information and visual selection to choose superior sheep. (0198 H002)
3. Manage a breeding flock during breeding and gestation. (0198 H003)
4. Manage a flock from lambing to weaning. (0198 H004)
5. Manage a flock from weaning to market. (0198 H005)
6. Determine proper prevention and/or control methods of common parasites, diseases and predators. (0198 H006)

Sheep Production (Revised 6-87)

CLASS/SECTION _____

STUDENTS:	Identify the opportunities available in the sheep industry. (0198 H001)	Combine information and visual selection to choose superior sheep. (0198 H002)	Manage a breeding flock during breeding and gestation. (0198 H003)	Manage a flock from lambing to weaning. (0198 H004)	Manage a flock from weaning to market. (0198 H005)	Determine proper prevention and/or control methods of common parasites, diseases and predators. (0198 H006)				

UNIT - SHEEP PRODUCTION

Lesson 1: The Sheep Industry

Objective: The student will identify the opportunities available in the sheep industry.

Study Questions

1. **What are the types of sheep enterprises?**
2. **What is the income potential of each sheep enterprise?**
3. **What are the advantages of raising sheep?**
4. **What are the disadvantages of raising sheep?**
5. **What are the career opportunities related to the sheep industry?**
6. **What assistance is available to the sheep and wool grower?**
7. **What organizations exist to improve the sheep industry, and what are each organization's major functions?**

References

1. Ricketts, G. E.; R. D. Scoggins; D. L. Thomas. Recommendations for a Sheep Management Program (publication 240). North Central Regional Extension, 1986. Chapters: "Introduction"; "Systems of Sheep Production"; "Specializing in Sheep Production"; "Crossbreeding for Commercial Lamb Production"

2. Handout

   a) HO 1.1: The Sheep Industry

NOTE: HO 1.1 is the primary reference for this lesson only. The chapters listed in Recommendations for a Sheep Management Program give an overall picture of the sheep industry.

UNIT - SHEEP PRODUCTION

Lesson 1: The Sheep Industry

TEACHING PROCEDURES

A. Introduction

Introduce the unit. Outline the lessons in the unit and discuss the competencies to be mastered.

B. Motivation

Bring in some photos of prize-winning sheep entries at county or state fairs. Display blue ribbons of past students' entries. Bring in a fleece or wool sample from a local producer along with wool products such as a blanket or sweater.

C. Assignment

D. Supervised study

E. Discussion

1. Raising sheep for meat and wool is an ancient husbandry practice. It is an agricultural enterprise that is as important for today's society as it was for people in centuries past. There are several types of sheep enterprise options available to anyone desiring to manage and produce sheep, lamb and wool. Ask students to list sheep enterprises in the community. What are the objectives of the sheep producers' and how do they differ. Many producers prefer to combine two or more sheep enterprises for greater income.

What are the types of sheep enterprises?

a) Purebred sheep enterprise
   1) Purebred sheep are eligible for registration in a breed association.
   2) Purebred flocks serve as a storehouse for desirable genetic traits that are useful to the commercial sheep population.
   3) Purebred sheep production involves the production of stud rams, commercial rams and replacement ewes.

b) Commercial sheep enterprise
   1) Sheep are raised for the prime purpose of selling meat (mutton and lamb), wool, pelts and offspring with little or no concern for sheep registration.
   2) Flocks may range from a few head to thousands.
   3) The flock is usually made up of purebred rams and crossbred ewes.

c) Lamb-feeding enterprise
   1) Producers purchase weaned lambs to feed and finish them to market weight.
   2) Lamb feeders are usually located in grain-producing areas.
d) Wool-growing enterprise
   1) Sheep breeds that are known for their high quality and/or high quantity wool are selected.
   2) The best wool breeds generally lack meat quality.
e) Sheep-exhibiting enterprise
   1) The purposes of showing sheep are for prize money, recognition and advertisement.
   2) Stock may be exhibited at fairs on the local, county, state, regional and national levels.

2. The producer in each enterprise has the ultimate goal of making a profit through the sale of breeding stock, meat or wool. List the enterprises categorically on the board and ask the students to determine how each sheep enterprise could generate an income. See the sheep budget in Missouri Farm Planning Handbook (Manual 75).

What is the income potential of each sheep enterprise?

a) In Missouri a commercial sheep flock that is skillfully managed can generally gross $100 to $120 per ewe annually.
b) The income potential of a sheep enterprise is influenced by several factors.
   1) Type of enterprise
   2) Producer differences
   3) Location
   4) Flock size
   5) Breed
   6) Market differences
   7) Variable costs
   8) Lambing percentage
   9) Flock health
c) The gross income from a flock can be increased if the producer has the interest, ability, knowledge and capital to manage a purebred flock, wool enterprise or sheep exhibiting enterprise. Each enterprise requires an investment. Lamb-feeding operations do not exist in Missouri on a large scale. Most producers feed their own lambs to market weight.

3. Sheep production has played an important role through America's history. The wool and meat produced have bolstered the nation's economy in times of need. The sheep's adaptability has aided in the development of land. Ask students why people choose to raise sheep.

What are the advantages of raising sheep?

a) Sheep yield many products.
   1) Meat
   2) Wool

3) Pelts
4) Milk for cheese production

b) Sheep convert all types of feed relatively well.
c) Sheep are capable of being raised on all types of land and in a wide range of environments.
d) Some breeds can reproduce twice each year.
e) Income from wool and lambs comes at different seasons.
f) Sheep eat a great variety of plants and forages.
g) Sheep are excellent weed destroyers.
h) Sheep are capable of gleaning grain lost at harvest.
i) Initial dollar investment is low.
j) Multiple births are common.
k) Sheep fit well into many balanced farming programs.
l) Expensive buildings, equipment or heavy labor are not required.
m) The sheep industry is stable.
n) Animals are relatively small and easy to handle.
o) Sheep can be raised on limited acreage.
p) The production of sheep and wool makes a good supervised occupational experience program (SOEP).

4. Every enterprise has its disadvantages. Sheep and wool growers are not without problems to solve. Ask students to identify why people may choose not to raise sheep. Ask them how the disadvantages of sheep production may be overcome.

What are the disadvantages of raising sheep?

a) Careful management is required if maximum income is to be generated.
b) Sheep are easy prey for predators such as dogs and wild animals like coyotes and bobcats.
c) Fences are needed for best control.
d) Sheep are very susceptible to internal and external parasites.
e) Sheep are very susceptible to some diseases.
f) Markets fluctuate for lamb and wool.
g) There is a limited market access for sheep and wool.
h) Lack of public knowledge may cause a negative public opinion of sheep.

5. Agriculture is a major industry in the United States, employing one out of every five workers. The sheep industry is a small part of agriculture yet the jobs in the sheep industry can be both interesting and rewarding. Ask students to list career opportunities, both full- and part-time, relative to the sheep industry.

What are the career opportunities related to the sheep industry?

a) Production
1) Sheep and wool producer
2) Shepherd
3) Commercial lamb feeder

b) Processing
   1) Weaver
   2) Wool grader
   3) Wool inspector
   4) Meat packer
   5) Meat processor
   6) Meat inspector
   7) Tannery worker
c) Distribution
   1) Trucker
   2) Auctioneer
   3) Handler
   4) Livestock dealer
d) General services
   1) Sheep exhibitor
   2) Shearer
   3) Supplies and equipment salesperson
   4) Sheep publication writer
   5) Photographer
   6) Editor
   7) Breed association secretary
e) Government services
   1) County extension agent
   2) State sheep specialist
   3) USDA worker
f) Scientific services
   1) Sheep and wool researcher
   2) Feed and nutrition expert
   3) Veterinarian

6. When raising sheep the grower may need assistance in solving sheep-related problems. Ask students to think of local individuals, companies or agencies who are qualified to assist the sheep and wool grower in areas of health, nutrition, management and marketing.

What assistance is available to the sheep and wool grower?

a) Local or state veterinarian
b) Local feed dealer
c) County extension agent
d) State sheep specialist
e) State sheep and wool grower's association
f) Livestock market personnel
g) Sheep breed associations
h) American Sheep Producers Council
i) U.S. Department of Agriculture
j) Vocational agriculture teacher
k) Experienced sheep producers

7. Several associations exist on the state and national level to help the sheep and wool grower. They support sheep producers through legislative efforts, research, advertisement, record keeping and

registration of purebred sheep. Ask students why extra support is helpful and often necessary for sheep producers. Addresses of sheep industry organizations and breed associations are included in the references and materials section of this guide.

What organizations exist to improve the sheep industry, and what are each organization's major functions?

a) National Wool Growers Association
   1) Legislative and political support for wool producers
   2) Supported by membership fees
b) National Lamb Feeders Association
   1) Legislative and political support for commercial lamb feeding producers
   2) Supported by membership fees
c) American Sheep Producers Council
   1) Promotes all phases of the sheep industry and its products
   2) Involved with sheep producer education
   3) Subdivided into the American Lamb Council and the American Wool Council
   4) Supported by deductions from wool incentives through the U.S. Department of Agriculture
d) Missouri Sheep Producers Inc.
   1) It is a statewide organization of sheep producers and others interested in the sheep industry.
   2) The primary goal is promotion and development of the sheep industry in Missouri.
      (a) Promotion of lamb and wool
      (b) Market improvement programs
      (c) Commercial ewe and ram directory
      (d) Midwest stud ram and bred ewe sale
      (e) Education programs for producers
      (f) Encourages sheep research
      (g) Incentives for 4-H and FFA sheep projects
      (h) Make-it-with-wool contest
      (i) State newsletter
      (j) Sponsorship of local sheep organizations
e) Sheep breed associations
   1) Record keeping and registry of purebred stock for the breed
   2) Promotes the breed

F. Other activities

1. Survey the area and prepare a list of sheep and wool growers.

2. Prepare a list of purebred breeders which could serve as a source for breeding stock.

3. Construct a bulletin board on the advantages and disadvantages of raising sheep.

4. Invite a sheep producer or extension agent to speak to the class on how and why he or she chose the profession.

G. Conclusion

Raising sheep can be both enjoyable and profitable as the scale of production can range from a small number of sheep to a large flock. The sheep industry is a growing industry and is important to today's consumer. Sheep producers have good support from a number of individuals, agencies and organizations.

H. Competency

Identify the opportunities available in the sheep industry.

I. Answers to Evaluation

Competency: Identify the opportunities available in the sheep industry. VAMS (0198 H001)

1. d
2. c
3. b
4. c
5. a
6. d
7. d
8. c
9. c
10. b

UNIT - SHEEP PRODUCTION Name_____

Lesson 1: The Sheep Industry Date_____

Competency: Identify the opportunities available in the sheep industry.

EVALUATION

Circle the letter that corresponds to the best answer.

1. The sheep enterprise that is mainly interested in sheep that are registered in a breed association is known as a _____.

   a. Wool growing enterprise
   b. Lamb feeding enterprise
   c. Commercial sheep enterprise
   d. Purebred sheep enterprise
   e. Exotic sheep enterprise

2. Which sheep enterprise would breed crossbred ewes with purebred rams and are in the business of selling meat, wool, offspring, and pelts?

   a. Wool growing enterprise
   b. Lamb feeding enterprise
   c. Commercial sheep enterprise
   d. Purebred sheep enterprise
   e. Specialty market enterprise

3. The major products of the sheep industry in the United States include which of the following?

   a. Meat and milk
   b. Meat and wool
   c. Meat and pelts
   d. Wool and milk
   e. Replacement stock and milk

4. All of the following are <u>advantages</u> in raising sheep in the United States <u>except</u>:

   a. Multiple births are common
   b. Low dollar investment
   c. Limited market access
   d. Sheep produce multiple products
   e. Sheep are relatively small animals

5. Which of the following careers in the sheep industry involve processing sheep/lamb products?

   a. Meat packer
   b. Sheep publication editor
   c. Sheep exhibitor
   d. Shepherd
   e. Veterinarian

6. Which sheep organization is nationally organized and promotes all phases of the sheep industry and its products?

   a. National Wool Growers Association
   b. National Lamb Feeders Association
   c. Missouri Sheep Producers, Inc.
   d. American Sheep Producers Council
   e. Hampshire Sheep Association

7. Who would you most likely contact concerning registration of sheep?

   a. Local veterinarian
   b. Feed dealer
   c. County extension agent
   d. Sheep breed association
   e. USDA

8. Who would you most likely contact regarding a foot health problem in your flock?

   a. State sheep and wool growers association
   b. County extension agent
   c. Local veterinarian
   d. State sheep specialist
   e. Breed association

9. Which sheep enterprise does not exist in Missouri on a large scale?

   a. Purebred sheep
   b. Commercial sheep
   c. Lamb feeding
   d. Wool growing
   e. Sheep exhibiting

10. What is the gross income of a 50 head ewe flock that has a gross income of $110.00/ewe?

    a. $5,000
    b. $5,500
    c. $5,600
    d. $50,000
    e. $55,000

THE SHEEP INDUSTRY

Sheep Enterprises

Every sheep enterprise distinguishes itself from the others because of such factors as location, owner, size, breed type(s), market, goals, etc. A main objective of any business is to make a profit.

A sheep producer has several choices on the type of sheep enterprise to enter. Frequently, the producer will be involved in a combination of sheep enterprises. The different sheep enterprises may be distinguished as: purebred sheep, commercial sheep, lamb-feeding, wool-growing and sheep-exhibiting.

Purebred sheep enterprise - Purebred sheep are those sheep eligible for registration in a breed association. The purebred flocks are the storehouse for those genetic traits that are desirable for profitable sheep production. Every breed differs in quality and characteristics. Sheep producers often seek and purchase stud rams and replacement ewes from purebred flocks.

Commercial sheep enterprise - Commercial sheep producers are not concerned with registering animals. The commercial producer seeks a highly productive and efficient flock. Meat and wool are produced for sale. Commercial flocks are typically made up of crossbred ewes mated with purebred rams, capitalizing on hybrid vigor. The flock size may range from a few to thousands.

Lamb-feeding enterprise - Lamb feeding involves purchasing, raising and feeding newly weaned lambs to market weight. The lambs are purchased in large numbers and are raised on a dry lot or feed lot. The lamb-feeding enterprise is generally located in grain-producing areas for lower feed cost.

Wool-growing enterprise - A wool-growing enterprise involves individuals interested in raising sheep primarily for wool. Breeds of sheep that are specifically noted for their superior wool quality and quantity are managed.

Sheep-exhibiting enterprise - Sheep exhibitors show sheep, lamb, wool or carcasses and compete for prize money and awards. The fairs or exhibitions are held on local, county, state, regional and national levels. Some fairs are limited to youth groups like 4-H and FFA; other fairs are open to any producer.

Income Potential

Good management and high production are essential for the maintenance of an efficient and highly profitable sheep flock. Each sheep enterprise concerns itself with variables which influence the net income potential for the producer. The income potential of a sheep enterprise is influenced by the type of enterprise, producer differences, location, flock size, breed, market differences, variable costs, flock health and lambing percentage.

The potential incomes for sheep production will be presented with the following example of a commercial flock. Costs and prices will vary with the

present market and should be updated so to be realistic to location and market conditions of the day.

EXAMPLE: A Missouri sheep producer raises 40 ewes for winter lambing. A 150 percent lamb crop is expected with 25 percent of the lambs to be kept for flock replacement. Twenty percent of the ewes are culled.

market lambs sold	
150% lamb crop x 110 lbs. average market weight x $.60/lb.....	$ 99.00
cull ewes sold	
125 lbs. ewe x 20% x $.15/lb.....	3.75
wool sold (wool plus incentive payments)	
10 lbs. wool/ewe x $1.00/lb. wool.....	10.00
Gross Income/Ewe.....	112.75
Gross Income/40 Head Flock or 40 x $112.75.....	$4,510.00

To obtain net income, the variable costs and the fixed costs need to be subtracted from gross income. Variable costs include costs of feed, marketing, breeding, veterinarian, labor and miscellaneous. Fixed costs include costs of depreciation; interest; shelter and equipment repairs; taxes; and insurance.

Gross income may be increased depending on the type of enterprise(s). A producer who raises purebred stock can sell breeding stock at a much higher price than feeder lamb prices. One who specifically raises sheep for wool can be assured of receiving a greater income from the high quality wool. Those producers who show sheep can generate income through prize money as well as stock sold. It should be noted that to receive extra income, extra money must be invested. For instance, those who exhibit sheep must spend money for transportation, entry fees, lodging, etc., to compete.

Advantages and Disadvantages

There are many advantages of raising sheep over other types of livestock. Sheep yield many products including meat, wool, pelts and even milk by some breeds for cheese production. Sheep convert feed better than most other types of livestock. Sheep are able to convert a variety of feeds to gain and maintain their weight. They are excellent weed destroyers. Sheep are capable of being raised on all types of land and in a wide range of environments. They are capable of gleaning grain lost at harvest, because of their mouth shape.

The initial investment in a sheep enterprise is relatively low as compared to other livestock enterprises. Sheep do not require expensive buildings, equipment or heavy labor. They are small and easy to handle. Sheep can be raised on limited acreage. Multiple births are common with sheep. Some breeds can reproduce two times each year. Producing sheep and wool makes an excellent Supervised Occupational Experience Program (SOEP).

Sheep fit well into many balanced farming operations. Lamb-feeding returns compete well with other meat-animal enterprises. The producer receives income at different seasons from the sale of the flock's wool and lamb. Overall, the sheep industry is stable.

Raising sheep is not without disadvantages. Careful management is crucial in all phases of sheep production if maximum income is to be generated.

Sheep are very susceptible to both internal and external parasites, as well as diseases. Sheep are easy prey for wild animals and dogs. Fences are necessary for best control and protection of the flock.

Marketing lambs may be a problem in some areas because of limited market access. The market prices for lamb and wool often fluctuate, so it is wise for the producer to watch the market and sell at the appropriate time and price level.

Each person or family needs to evaluate if one or more sheep enterprises would be profitable for them and their situation.

Careers

Agriculture is the largest industry in the United States, employing one of every five workers. The sheep industry is a small part of agriculture, yet its jobs can be both interesting and rewarding.

The careers within the sheep industry can be categorized as careers of production, processing, distribution, general services, government services and scientific services.

Production - Individuals involved with the direct production of sheep, lamb and wool are called producers or growers. They feed, handle and manage the sheep. Careers include sheep producer, wool producer and shepherd for an owner or commercial lamb feeder.

Processing - People involved with processing deal with sheep products such as meat, wool and pelts. The sheep is the true manufacturer. People process the product. Careers include weaver, wool grader, wool inspector, meat packer, meat processor, meat inspector, tannery worker and related jobs.

Distribution - Those involved with distributing sheep and wool products deal in transportation and marketing. Careers include truckers, auctioneers, handlers and dealers.

General services - People who aid the sheep and wool grower with real items, advertising and information are involved in the general service area of the sheep industry. Careers include exhibitor, shearer, supplies and equipment salesperson, sheep publication writer, photographer, editor and breed association secretary.

Government services - Hundreds of individuals are employed by local, state and federal governments to aid the sheep and wool grower. Careers include county extension agent, state sheep specialist or USDA worker.

Scientific services - People involved in scientific research are also needed for growth and development of the sheep industry. Careers in scientific services include the sheep and wool researcher, feed and nutrition experts, and veterinarians.

Assistance to the Sheep and Wool Grower

Every sheep producer, whether novice or expert, needs outside help of some kind. Many questions arise in sheep breeding, lambing, health, management, nutrition, marketing, etc. It is sometimes difficult to find the answers. It is important to know from whom and where to get advice and information. Depending on the type of advice sought, assistance can be available from several sources.

1. Local or state veterinarian
2. Local feed dealer
3. County extension agent
4. State sheep specialist
6. State sheep and wool growers association
7. Sheep breed associations
8. American Sheep Producers Council
9. U.S. Department of Agriculture
10. Livestock market personnel
11. Vocational agricultural teacher
12. Experienced sheep and wool growers

Major Sheep Industry Associations

Several associations exist on state and national levels to help the sheep and wool grower. They support sheep producers through legislative efforts, research, advertisement, record keeping and registration of purebred sheep.

The National Wool Growers Association (NWGA) and the National Lamb Feeders Association (NLFA) give legislative and political support to sheep and wool growers and lamb feeders, respectively. Both associations are financially supported by membership fees.

The American Sheep Producers Council (ASPC) promotes all phases of the sheep industry. It is subdivided into the American Lamb Council and the American Wool Council. The ASPC is involved with advertisement and promotion of sheep, lamb and wool and in sheep producer education. Both councils are supported through deductions from wool incentives paid by the USDA.

The Missouri Sheep Producers Inc. is a statewide organization of sheep producers and others interested in the sheep industry. The primary goal is to promote and develop the sheep industry in Missouri. This is accomplished through several ways.

1. Promotion of lamb and wool
2. Market improvement programs
3. Commercial ewe and ram directory
4. Midwest stud ram and bred ewe sale
5. Education programs for producers
6. Encourages sheep research
7. Incentives for 4-H and FFA sheep projects
8. Make-it-with-wool contest
9. State newsletter
10. Sponsorship of local sheep organizations

The breed association is primarily involved in animal registry and record-keeping. It also promotes the breed and the sheep industry in general.

UNIT - SHEEP PRODUCTION

Lesson 2: Sheep Selection

Objective: The student will combine production information and visual selection to choose superior sheep.

Study Questions

1. **List the classes of sheep and the breeds in each class.**
2. **What are the distinguishing characteristics of each class?**
3. **What are the distinguishing characteristics of the major sheep breeds?**
4. **What are the factors to consider in selecting a breed?**
5. **Identify the body parts of a sheep.**
6. **What factors should be used in selecting breeding stock?**
7. **What factors should be used in selecting lambs for feeding?**
8. **What production records should be kept?**

References

1. Ricketts, G. E.; R. D. Scoggins; D. L. Thomas. Recommendations for a Sheep Management Program (publication 240). North Central Regional Extension. Chapters: "Cross Breeding for Commercial Lamb Production"; "Selecting Ewes and Rams"; and "Production Records for a More Profitable Flock"
2. Handout
   a) HO 2.1: Sheep Selection
3. Transparency Master
   a) TM 2.1: Body Parts of a Sheep
4. Work Sheets
   a) WS 2.1: Sheep Breed Characteristics
   b) WS 2.2: Body Parts of a Sheep

UNIT - SHEEP PRODUCTION

Lesson 2: Sheep Selection

TEACHING PROCEDURES

A. Review

Review the previous lesson.

B. Motivation

Using a wall chart of a lamb carcass, show students where high price cuts of meat are located. Explain how proper selection and management influence monetary returns.

C. Assignment

D. Supervised study

E. Discussion

1. Sheep may appear to be alike to the layperson. But the sheep and wool producer is able to easily distinguish one breed from another by its characteristics and qualities. Have students list the sheep breeds with which they are familiar. The following list is the classification of breeds by the American Sheep Producers Council. Distribute HO 2.1.

List the classes of sheep and the breeds in each class.

a) Ewe breeds
   1) Delaine-Merino
   2) Rambouillet
   3) Debouillet
   4) Corriedale
   5) Targhee
   6) Finnsheep
   7) Border Leicester
   8) Polypay

b) Sire breeds
   1) Suffolk
   2) Hampshire
   3) Shropshire
   4) Oxford
   5) Southdown
   6) Cheviot
   7) Montadale

c) Dual-purpose breeds
   1) Columbia
   2) Dorset

3) Lincoln
4) Romney

d) Other breeds
1) Cotswold
2) Karakul
3) Navajo
4) Panama
5) Tunis
6) Barbados Blackbelly
7) Katadin

2. Each sheep breed has specific physical characteristics and genetic capabilities. Have students use pictures to categorize the sheep breeds into the four classes. Ask if they see any similarities among the breeds within a class. (HO 2.1)

What are the distinguishing characteristics of each class?

a) Ewe breeds
1) Generally white-faced sheep
2) Selection characteristics
(a) Adaptability to environmental conditions
(b) Reproductive efficiency
(c) Wool production - fine, medium or long wool
(d) Size
(e) Milking ability
(f) Longevity
3) Generally spanish origin

b) Ram breeds
1) Generally black-faced
2) Recognized as meat-type breeds
3) Raised for production of rams
4) Selected for growth rate and carcass quality
5) Generally english origin

c) Dual-purpose breeds
1) May be used as ewe or ram breeds, depending upon the production situation
2) Good all-around sheep breeds
3) Used to improve either wool or meat qualities

3. A sheep producer should be familiar with the major breeds of sheep. Being able to determine major breed characteristics is important in sheep breeding and selection. Have students complete WS 2.1 during the discussion of this question.

What are the distinguishing characteristics of the major sheep breeds?

Major Sheep Breeds

Breed Name	Weight Range In Pounds	Physical Appearance	Other Distinctive Characteristics
•••••••••• EWE BREEDS ••••••••••		EWE BREEDS ••••••••••	EWE BREEDS ••••••••••
Corriedale	R 175-275 E 130-180	Polled, white face, ears and nose but a black nostril is preferred; wooled legs	Excellent fleeces for wool length, brightness, softness and crimp; produce desirable crossbred market lambs; gregarious
Finnsheep (finnish Landrace)	R 150-200 E 120-190	Very little wool on head; white hair on face, ears and legs	Highly prolific; excellent maternal instincts; excellent milkers and easy lambers; very hardy
Polypay	R 200-300 E 150-200	White hair on face and ears	Synthetic breed (crossbred from many breeds for specific purpose) (Targhee x Dorset) x (Rambouillet x Finnsheep) 2x year lambings
Rambouillet	R 250-300 R 150-200	Polled and horned rams; polled ewes; cream to white hair on face and ears; wooled legs	One of the best sheep for breeding year around; very hardy; long-lived; gregarious; fine wool breed
Targhee	R 200-300 E 125-200	Polled; rangy; white hair on face and ears; wooled legs to knees	Long productive life, crosses well for market lambs; adaptable to wide range of climate and feed conditions; long breeding season
••• DUAL PURPOSE BREEDS •••		DUAL PURPOSE BREEDS •••	DUAL PURPOSE BREEDS •••
Columbia	R 225-300 E 150-225	White hair on ears, face and on legs below knees and hocks; pink nostrils	Excellent fleeces; gregarious; useful in crossbred market-lamb production
Dorset	R 210-250 E 140-180	Fine white hair on face below eyes and on ears; horned and polled breeds exist	Long breeding season; able to breed almost any time of the year; can produce more than one lamb crop; hardy; long-lived

Major Sheep Breeds

Breed Name	Weight Range In Pounds	Physical Appearance	Other Distinctive Characteristics
•••••••••• RAM BREEDS ••••••••••		RAM BREEDS ••••••••••	RAM BREEDS ••••••••••
Cheviot	R 160-200 E 130-180	White face with black nose; black spots are often on ears; no leg wool; no head wool	Prolific; excellent maternal instincts; stylish; alert; and active
Hampshire	R 225-325 E 175-225	Very little wool or no wool on face preferred; black face and ears; black wooled legs up to knees and hocks; pink skin preferred	Excellent growth rate; excellent carcasses; good milkers; adaptable to farm flock and range operations
Montadale	R 200-275 E 150-200	White face and legs; no wool on face and legs	Multipurpose sheep; excellent maternal instincts; hardy
Oxford	R 200-300 R 150-200	Variable from gray to brown hair on face and legs; wooled legs; wooled face	Heavy milking; good maternal instincts; good growth rate and carcass merit
Shropshire	R 225-250 E 150-180	Dark brown or black hair on nose, ears and on legs up to the knees	Easy lambers; good mothers and milkers; good fleeces
Southdown	R 190-230 E 130-180	Gray to mouse brown hair on nose and ears; some have excessive wool on the face which may cause wool blindness	Excellent in muscling; excellent light weight carcass produced; early maturing
Suffolk	R 250-350 E 180-250	Jet black head, ears and legs; white wool; no wool on head or legs	Excellent growth rate; excellent milking and lambing ability; excellent carcass quality

4. In selecting a sheep breed there are many variables to consider. Ask students why a person entering sheep production should spend time in deciding which breed(s) to raise.

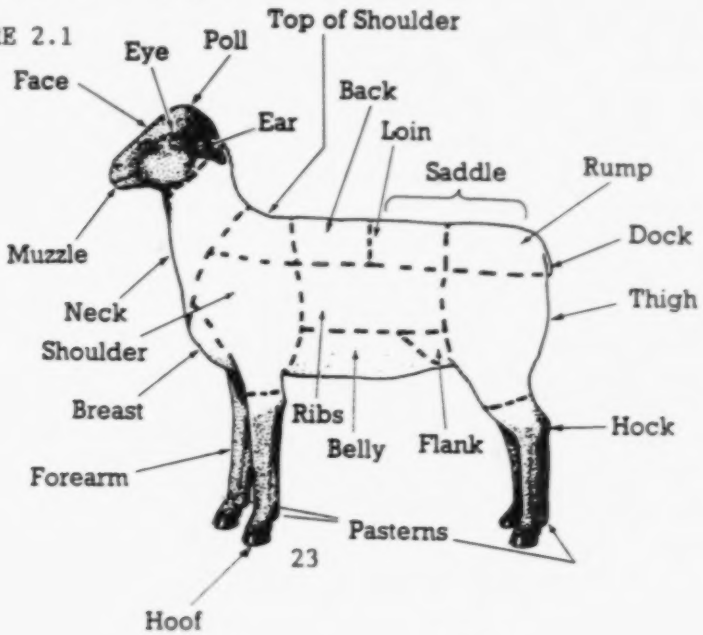
What are the factors to consider in selecting a sheep breed?

a) Breed availability
   1) Initial purchase
   2) Future breeding with different blood lines of same breed
b) Market for the breed
c) Breeding/lambing times desired
d) Size of the dams
e) Growth rate
f) Feed efficiency
g) Carcass merit - ratio of lean meat to fat
h) Grazing ability
i) Heat tolerance
j) Ease of lambing
k) Milk production
l) Mothering ability
m) Prolificacy - number of lambs born
n) Longevity - length of productive life
o) Hardiness
p) Desirable fleece
q) Personal preference or appearance

5. Discuss with students why it is important to be able to identify the body parts of a sheep. This knowledge is useful for descriptive purposes in health, selection, judging and selling. Compare the body parts of a sheep with meat cuts in Lesson 4, Unit 1 of the Meats Curriculum published by Instructional Materials Laboratory. (TM 2.1 and WS 2.2)

Identify the body parts of a sheep.

FIGURE 2.1



6. The breed of sheep selected is partially determined by the availability of good foundation stock or breeding stock. There is a certain amount of risk when purchasing breeding stock. Ask students what information they would require before purchasing breeding stock.

What factors should be used in selecting breeding stock?

a) Condition of birth (single, twin or triplet)
b) Growthiness (size for age)
c) Previous performance - information from production records
d) Conformation
e) Soundness
    1) Feet and legs
    2) Mouth
    3) Udder
    4) Testicle size and soundness
f) Wool
g) Age
h) Sex character
i) Breed type
j) Heritability of traits
k) Good health
l) Price
i) Availability
n) Blood line
o) Reputable breeder
p) Transportation
q) Registration papers
r) Open-faced (lack wool on face)
s) Inverted eyelid trait

7. A producer needs to be careful when selecting lambs for feeding to market weight. Ask students to list several precautions before buying lambs. How does the selection and purchase of feeder lambs differ from breeding stock? (HO 2.1)

What factors should be used in selecting lambs for feeding?

a) Cost
b) Reputable seller
c) Health
    1) Avoid extreme internal parasite infection.
    2) Avoid lambs with foot rot.
    3) Avoid weak, undersized and gaunt lambs.
    4) Avoid lambs that are scouring.
    5) If lambs come from another state, check with your local or state veterinarian to determine whether lambs must be dipped for scabies.
d) Feed used
e) Transportation
f) Estimated shrinkage

g) Cost of feed for lambs in transit
h) Conformation
i) Condition
j) Uniformity in size and age
k) Weight
l) Condition of fleece - Lambs in full fleece are worth more.
m) Point of origination of lambs

8. Keeping records of sheep and lambs may mean the difference between profit and loss. Discuss with students the importance of production records and the flexibility of their use.

What production records should be kept?

a) Lambing and weaning record
b) Individual ewe production record
c) Yearling weight record

F. Other Activities

1. Have students select a sheep breed association to write to for pictures and information on the breed.

2. Using a world map, pinpoint where the various sheep breeds originated. The result would make a colorful and informative bulletin board.

3. Invite a local sheep producer to speak on the importance of keeping production records.

4. Appoint students to present a sheep breed to the class, describing qualities and characteristics of the breed.

5. Write to the American Sheep Producers Council for a wall poster entitled "Who's Who in U.S. Sheep Breeds."

6. Write to National Livestock and Meat Board for a color poster of retail cuts of lamb.

G. Conclusion

The successful sheep producer is familiar with sheep breeds, body parts, stock selection, record keeping and more. It is true that knowledge influences success, but it should be said that knowledge is best gained bit by bit. Every little bit of sheep knowledge helps.

H. Competency

Combine information and visual selection to choose superior sheep.

I. **Answers to Evaluation**

Competency: Combine information and visual selection to choose superior sheep. VAMS (0198 H002)

1. c
2. a
3. b
4. e
5. c
6. d
7. a
8. c
9. b
10. a

J. Answers to work sheets

1. WS 2.1: Sheep Breed Characteristics
   See Study Question 3.

2. WS 2.2: Body Parts of a Sheep

   1. Ear
   2. Muzzle
   3. Eye
   4. Poll
   5. Neck
   6. Breast
   7. Top of shoulder
   8. Back
   9. Loin
   10. Rump
   11. Dock
   12. Thigh
   13. Hock
   14. Flank
   15. Belly
   16. Ribs
   17. Shoulder
   18. Hoof
   19. Pastern
   20. Face
   21. Forearm
   22. Saddle

UNIT - SHEEP PRODUCTION Name_____

Lesson 2: Sheep Selection Date_____

Competency: Combine information and visual selection to choose superior sheep.

EVALUATION

Circle the letter that corresponds to the best answer.

1. Which of the following sheep breeds is classified as a ram breed?

   a. Finn sheep
   b. Corriedale
   c. Suffolk
   d. Rambouillet
   e. Targhee

2. Which of the following sheep breeds is considered a dual purpose breed?

   a. Dorset
   b. Hampshire
   c. Southdown
   d. Polypay
   e. Cheviot

3. Which of the following breeds is classified as a ewe breed?

   a. Columbia
   b. Finn Sheep
   c. Suffolk
   d Shropshire
   e. Dorset

4. Which of the following would <u>not</u> be a factor in selecting a sheep breed?

   a. Mothering ability
   b. Carcass merit
   c. Growth rate
   d. Breed availability
   e. Estimated shrinkage

5. Which of the following would <u>not</u> be a factor in selecting breeding stock?

   a. Price
   b. Breed type
   c. Deworming schedule
   d. Conformation
   e. Growthiness

6. What is the top of a sheep's head called?

   a. Loin
   b. Dock
   c. Dish
   d. Poll
   e. Brisket

7. What is the part of the sheep located above the rear leg called?

   a. Rump
   b. Pastern
   c. Brisket
   d. Hock
   e. Flank

8. What does prolificacy in sheep mean?

   a. Good milk production
   b. Long productive life
   c. High lambing percentage
   d. Good rate of gain
   e. Good ratio of lean meat to fat

9. When selecting lambs for feeding which of the following would not be included?

   a. Conformation
   b. Registration papers
   c. Health
   d. Weight
   e. Cost

10. Which sheep record would be most useful in overviewing an entire flock for culling purposes?

   a. Barn record
   b. Individual ewe production record
   c. Yearling weight record
   d. Wool production record
   e. Feed purchasing record

SHEEP SELECTION

Sheep Breeds

There are many ways to classify sheep because they yield multiple products. Sheep are usually classified based on characteristics of meat production or wool production. The American Sheep Producers Council classifies sheep breeds as follows:

Ewe breeds - Ewe breeds are generally white-faced sheep. They are typically selected for their milking ability, size, longevity and reproductive efficiency. Ewe breeds can be a fine, medium or long wool sheep. They adapt to a variety of environmental conditions. Breeds classified as ewe breeds include Delaine-Merino, Rambouillet, Debouillet, Corriedale, Targhee, Finnsheep, Border Leicester and Polypay.

Ram breeds - Ram breeds, also known as sire breeds, are generally recognized as meat-type breeds. They are selected for their high growth rate and carcass quality. Ram breeds, crossed with ewe breeds, yield greater profitability. Ram breeds include Suffolk, Hampshire, Shropshire, Oxford, Southdown, Cheviot and Montadale.

Dual-purpose breeds - Dual-purpose breeds are good all-around sheep breeds. They are used to improve either wool or meat qualities and may be used as ewe or ram breeds, depending on the production situation. Dual-purpose breeds include Columbia, Dorset, Lincoln and Romney sheep.

Other - Breeds that do not classify distinctly as any of the above types include Cotswold, Karakul, Navajo, Panama, Tunis, Barbados Blackbelly and Katadin.

Selecting a Sheep Breed

Each sheep breed has distinguishing characteristics and qualities. When selecting a breed of sheep for production there are many factors to consider. The objectives, size and location of the planned sheep enterprise will influence how important the following factors will be in considering a breed.

The buyer should consider the market and the availability of breeding stock in the area. Availability of the breed influences not only the initial purchase of stock but also future purchasing of different blood lines of the breed.

Breeds have different characteristics that should be considered when selecting a sheep breed. Ewe characteristics include breeding/lambing time; milk production; mothering ability; prolificacy, or number of lambs born; and longevity, or productive life length. High growth rate and high feed efficiency are always important for those sheep operations in which meat is the main objective. Carcass merit, the ratio of lean meat to fat, is also seen as an important factor because of consumer preference.

Depending on the area, characteristics such as grazing ability, heat tolerance and hardiness can be highly valued.

Because wool production and sales can mean a large percentage of income for the producer, sheep with desirable fleeces should be sought.

Personal preference and appearance of the breed by the producer may be the deciding factor in sheep breed selection. Breed choice may mean success or failure in the sheep industry.

Selecting Lambs for Feeding

A producer needs to exercise caution when buying lambs for feeding to market weight. Cost may be the concluding factor, but other factors should also be considered.

A buyer should be certain the seller has a good reputation. The seller should be trusted and known by the buyer, or at least well recommended by another buyer.

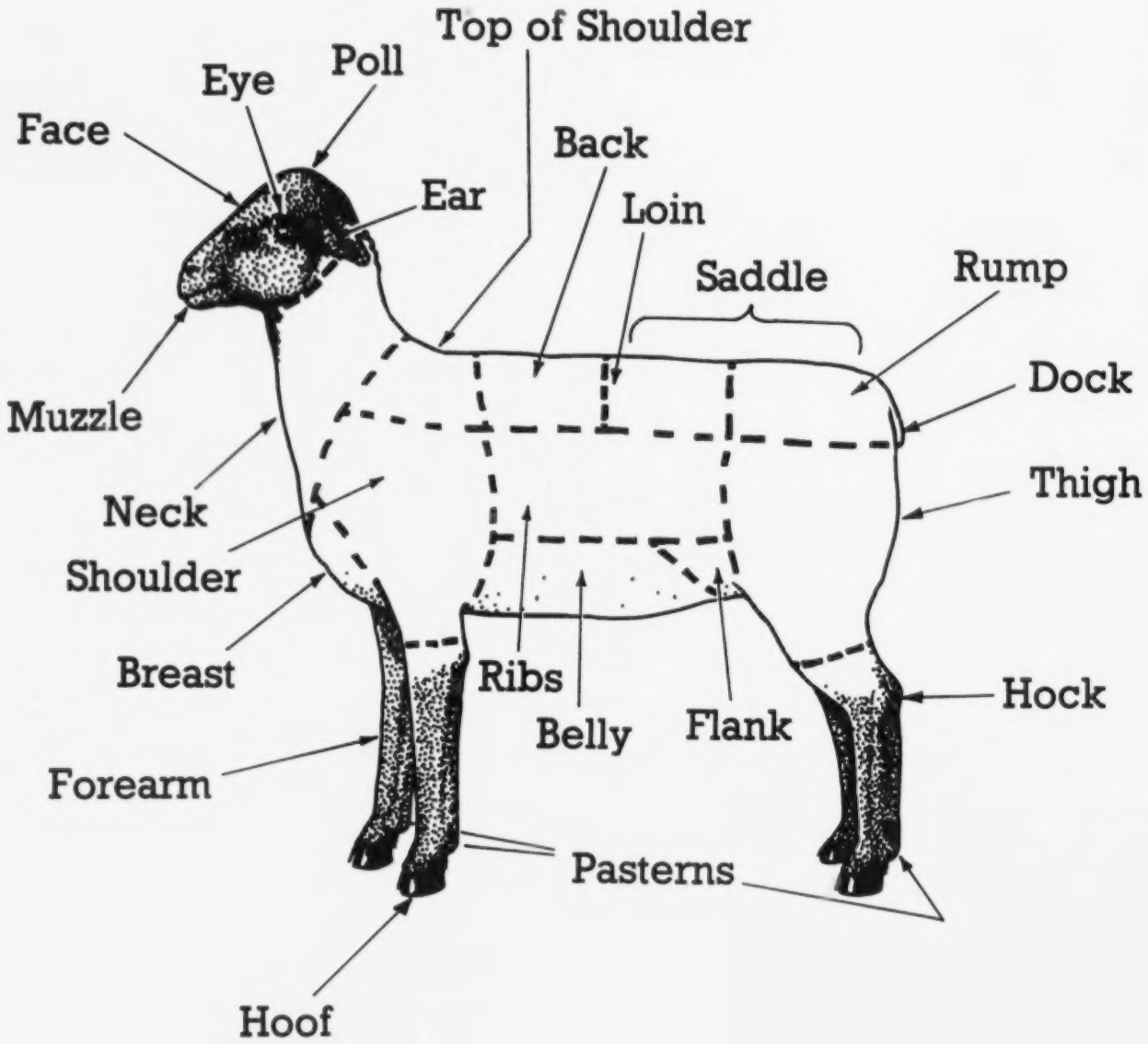
Good health of feeder lambs is required. Raising weak or sickly lambs is unprofitable. The buyer should avoid extreme cases of internal parasite infection; lambs with foot rot; weak, undersized and gaunt lambs; and lambs that are scouring. If lambs come from another state, the buyer should check with the local or state veterinarian to determine whether lambs must be dipped for scabies.

The lambs' weight, condition, body conformation, uniformity of size and age, and fleece condition can make a difference in the profit margin at market time.

A buyer should consider the location from where the lambs are being shipped. The type and cost of transportation, estimated shrinkage of the lambs and feed cost for lambs in transit should be considered. These factors will all influence price.

Finally, the buyer should be sure to know the type of feed the lambs were on through weaning. Questions of feed ingredients, medication and protein percentage should be answered. The handling and transportation of young lambs is stressful for the livestock. Stress should be reduced as much as possible.

Body Parts of a Sheep



Major Sheep Breeds

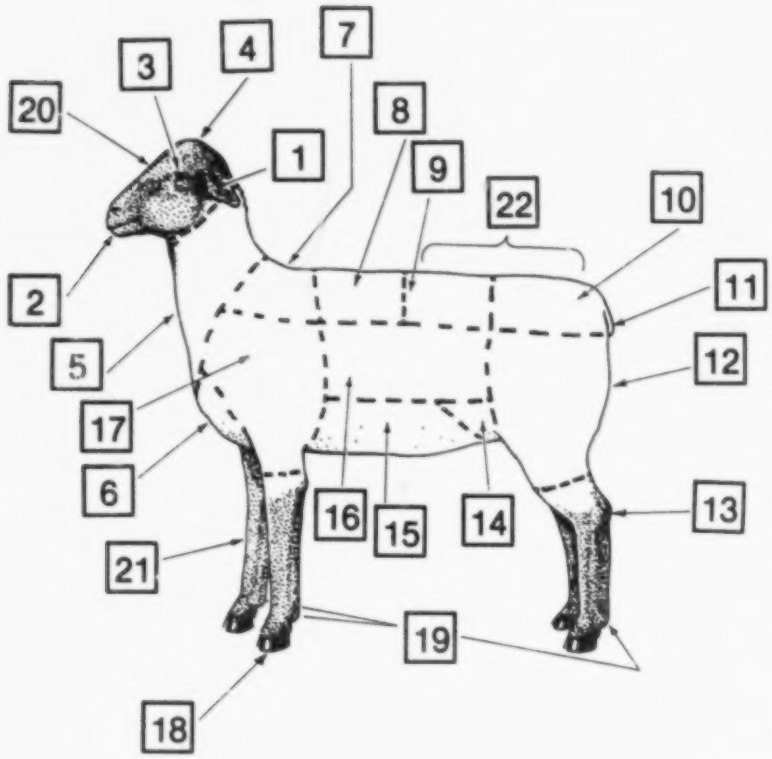
Breed Name	Weight Range In Pounds	Physical Appearance	Other Distinctive Characteristics
•••••••••• EWE BREEDS ••••••••••	EWE BREEDS	•••••••••• EWE BREEDS	••••••••••
Corriedale			
Finnsheep (finnish Landrace)			
Polypay			
Rambouillet			
Targhee			
••• DUAL PURPOSE BREEDS •••	DUAL PURPOSE BREEDS	••• DUAL PURPOSE BREEDS	•••
Columbia			
Dorset			

Major Sheep Breeds

Breed Name	Weight Range In Pounds	Physical Appearance	Other Distinctive Characteristics
•••••••••• RAM BREEDS ••••••••••		RAM BREEDS ••••••••••	RAM BREEDS ••••••••••
Cheviot			
Hampshire			
Montadale			
Oxford			
Shropshire			
Southdown			
Suffolk			

BODY PARTS OF A SHEEP

Fill in the blanks with the correct sheep part.



1. _____
2. _____
3. _____
4. _____
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12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____

UNIT - SHEEP PRODUCTION

Lesson 3: Managing the Breeding Flock

Objective: The student will manage a breeding flock during breeding and gestation.

Study Questions

1. **When does a ewe reach puberty, and what factors influence the lamb's age at puberty?**

2. **What is the length of the estrous cycle, and how often and when does estrus occur?**

3. **How long is the gestation period of sheep?**

4. **List the steps in preparing the ewe(s) for breeding.**

5. **List the steps in preparing the ram for breeding.**

6. **What is the suggested ewe-to-ram ratio?**

7. **Describe the care and feeding of ewes during gestation.**

References

1. Ricketts, G. E.; R. D. Scoggins; D. L. Thomas. Recommendations for a Sheep Management Program (publication 240). North Central Regional Extension. Chapters: "Considerations During the Breeding Season"; "Sheep Health Management"; "Selecting Ewes and Rams"; "Ewe Nutrition"; "Ewe Management During Gestation"

2. Handout

   a) HO 3.1: The Ewe's Reproductive Cycle

UNIT - SHEEP PRODUCTION

Lesson 3: Managing the Breeding Flock

TEACHING PROCEDURES

A. Review

Briefly re-examine sheep selection and production records, and why each is important to the producer. Present the next three lesson titles to students and explain how the events of breeding, lambing, weaning and marketing occur in a calender year.

B. Motivation

Bring a marking harness and markers to class. Display the harness and markers to the class. Explain what the harness is and how it would be used. Explain why there is a need for a range of colors from light to dark. What is an alternative method of marking if a harness is not available?

C. Assignment

D. Supervised study

E. Discussion

1. In the past, most shepherds managed their flocks so that ewes would drop lambs at two years of age. However, because ewe lambs can successfully lamb as yearlings, many sheep producers are considering this option. Ask students why they think shepherds would choose to have their ewe lambs bred. Discuss the advantages and disadvantages of breeding ewe lambs. Distribute HO 3.1.

   When does a ewe reach puberty, and what factors influence the lamb's age at puberty?

   a) A ewe reaches puberty at 5-12 months of age.
   b) Puberty is influenced by genetics, nutrition, date of birth, weather, breed and presence of a ram.

2. Sheep are seasonal breeders. Their offspring would naturally be born in the spring, the most favorable time for the survival of the young. The breeding time of domestic sheep has been slightly altered for greater profitability and advantage for the sheep producer. Ask students why a shepherd would want lambs born outside of the normal lambing season. (HO 3.1)

What is the length of the estrous cycle, and how often and when does estrus occur?

a) The length of estrus (heat period) ranges from 20 to 42 hours. Average length is 30 to 35 hours. Ovulation occurs late in this period.
b) On the average, the length of the estrous cycle is 16 days, meaning that estrus occurs every 16 days.
c) With most sheep breeds, estrus begins to occur as day length begins to shorten in September, October and November.

3. Every species has a specific gestation length. As the lamb is formed and develops, many changes take place in the lamb and in the ewe. (HO 3.1)

How long is the gestation period of sheep?

The average gestation period of sheep is 147 days.

4. A good manager in any field thinks to the future and tries to prepare for it, whether short or long range. A shepherd must manage the sheep with skill throughout the year to avoid setbacks or losses and thus have a good chance at making a profit. The brood ewes in a flock need to be in good condition when the ewes begin their estrous cycles. Ask students their ideas of how best to prepare a ewe for breeding. What aspects of the flock should be considered?

List the steps in preparing the ewe(s) for breeding.

a) Thirty days before breeding
    1) Vaccinate ewes if a problem is present.
        (a) Vibrio
        (b) Chlamydia
        (c) Leptospirosis
        (d) Soremouth
        (e) Foot rot
    2) Deworm ewes and ram including "teaser" or vasectomized ram.
    3) Trim sheep's feet and run all sheep through foot bath.
b) Two to three weeks before breeding
    1) Flush feed ewes with extra grain and/or lush pasture.
    2) Turn in the "teaser" ram.
    3) Crutch (tag) the ewes to be bred.
    4) Provide comfortable and clean loafing areas.
    5) Make sure all ewes have ear tags and are paint-branded for identification.
        (a) Use only approved marking paint.
        (b) Proper identification aids record keeping.
c) Breeding time
    1) Turn ram in with ewes approximately five months before desired lambing time.
    2) Monitor breeding activity and keep records.

5. The ram represents a sizeable investment in the flock. He should be treated well, as next year's lamb crop depends on the ram settling the ewes. Discuss with students the importance of the ram and the need for proper management for best profits.

List the steps in preparing the ram for breeding.

a) Six to eight weeks before turning in the ram
   1) Shear ram for maximum performance.
   2) Deworm ram.
   3) Trim feet and run through foot bath.
   4) Measure scrotal circumference.

b) Two to three weeks before turning in the ram
   1) Flush feed those rams that need extra nutrition with extra grain and/or lush pasture.
   2) Trim or shear the wool on scrotum and around the sheath if the ram is unshorn.

c) Just before turning the ram in with the ewes
   1) Paint breast tuft with marking paint or use a marking harness. Vary the colors every 14 days. Begin with light-colored markers and change to darker; for example yellow, red then black.
   2) If possible, alternate rams in commercial flocks.

   NOTE: The use of markers help determine if the ram is servicing the ewes and if a high percentage of ewes are being settled on the first service. Replace the ram if a high percentage of ewes are not settling after two services.

6. There is a point in flock size when more than one ram is required for servicing all ewes. Ask the class what other factors may warrant the need for an extra ram. Consider ram age, breed differences, inbreeding precautions, hybrid vigor, etc. These factors will determine how many ewes he can successfully serve under normal field-mating conditions.

What is the suggested ewe-to-ram ratio?

a) A ram lamb can be used on no more than 15 ewes.
b) A yearling ram can be used on 25 to 35 ewes.
c) A mature ram can be used on 35 to 45 ewes.

NOTE: A good rule of thumb is to have three mature rams for every 100 ewes in the breeding flock.

7. At the end of the breeding season the ram should be removed and kept from ewes. The next five months are spent keeping the pregnant ewes healthy in preparation for lambing. Discuss with students their ideas of proper care and feeding of the pregnant ewes.

Describe the care and feeding of ewes during gestation.

a) Sixty to ninety days after the ram was turned in with the ewes

1) Give all ewes a vibrio booster. (Check with local veterinarian.)
2) Allow ewes to exercise throughout gestation.

b) Thirty to forty-five days before lambing
1) Shear ewes if adequate protection from cold weather can be provided.
2) Inject ewes with a vitamin E/selenium combination, or feed a selenium fortified supplement.
3) Begin to feed grain specially mixed for sheep, in addition to roughage, working ewes up to 3/4-1 pound/ewe/day.
4) Vaccinate ewes with clostridium CD toxoid, tetanus toxoid and pasteurella bacteria. Repeat again in two weeks.
5) Treat for coccidiosis if a problem exists.
6) Clean barns to bare ground and spread limestone as a base; cover with fresh bedding.
7) Make salt and trace mineral mix available.
8) Clean, fresh water should be available at all times.

c) Ten days before lambing
1) Set up lambing pens.
2) Check equipment and medical supplies.
3) Sort ewes to lamb early.
4) Refrigerate drugs.

F. Other activities

1. Construct a time line for the life of a sheep. Include pictures and calender dates. Begin with breeding and include gestation, lambing and weaning.

2. Put together a chart of gestation periods for selected farm, domestic and wild animals.

3. Invite a veterinarian to speak about sheep reproduction.

G. Conclusion

Management is the key in preparing for a successful lambing season. Proper care should be given to the ewe before, during and after breeding to ensure a productive and profitable flock. The ram should also be treated well, because next year's lamb crop depends on him.

H. Competency

Manage a breeding flock during breeding and gestation.

I. Answers to Evaluation

Competency: Manage a breeding flock during breeding and gestation. VAMS (0198 H001)

1. b	2. d	3. c	4. e	5. b
6. d	7. d	8. c	9. b	10. a

UNIT - SHEEP PRODUCTION Name_____

Lesson 3: Managing the Breeding Flock Date_____

Competency: Manage a breeding flock during breeding and gestation.

EVALUATION

Circle the letter that corresponds to the best answer.

1. At what age does a ewe lamb reach puberty and is ready for breeding?

   a. 3 - 4 months
   b. 5 - 12 months
   c. 12 - 18 months
   d. 18 - 24 months
   e. 24 - 30 months

2. If a ewe was successfully bred on September 15, on what day would you expect the lamb(s) to be born?

   a. December 30
   b. January 30
   c. January 30
   d. February 15
   e. March 1

3. Raising the nutritional level of ewes and rams before breeding with extra grain or lush pasture is known as which one of the following?

   a. Lead feeding
   b. Force feeding
   c. Flush feeding
   d. Micro feeding
   e. Creep feeding

4. A ram that is surgically fixed or vasectomized and is kept in the flock is known as a _____.

   a. Stud ram
   b. Purebred ram
   c. Ram lamb
   d. Cryptor chid
   e. Teaser ram

5. Overheating of rams to be used for breeding may cause:

   a. Excess fat
   b. Sterility
   c. Foot rot
   d. Worms
   e. Madness

6. Crutching or tagging ewes to be bred means to _____.

   a. Ear tag all ewes for identification
   b. Paint brand ewes
   c. Shear the ewes
   d. Trim wool from the ewe's udder and dock area
   e. Deworm the ewes

7. What is the suggested ram to ewe ratio using an aged ram under normal field-mating conditions?

   a. One ram/ewe
   b. One ram/10 ewes
   c. One ram/20 ewes
   d. One ram/35 ewes
   e. One ram/100 ewes

8. How many days apart does estrus occur in ewes during breeding season?

   a. 8 days
   b. 12 days
   c. 16 days
   d. 20 days
   e. 28 days

9. With most sheep breeds estrus begins to occur with high fertility _____.

   a. As ewes are exposed to rams
   b. As day length begins to shorten
   c. As day length begins to lengthen
   d. As feed is increased
   e. As deworming is routinely accomplished

10. Which color marker would most likely be the first one used on a ram's marking harness during breeding season?

   a. Yellow
   b. Red
   c. Blue
   d. Green
   e. Black

THE EWE'S REPRODUCTIVE CYCLE

Traditionally, sheep producers bred their ewes as yearlings, because at that age they were reproductively mature and they fit well into the production calender. It has been found, however, that ewes bred as lambs (under one year of age) are more productive over their lifetime. Breeding seven-to-eight-month-old ewe lambs has several advantages:

1. This practice gets ewes into production about a year earlier, thereby reducing maintenance cost.
2. It shortens the generation interval and results in a more rapid progress in selected traits.
3. It increases lifetime production of the ewe.
4. It identifies those ewes that are more productive.
5. It reduces health risks from buying replacement ewes.

There are several management factors in breeding ewe lambs that must be considered and adapted for successful breeding and lambing.

1. Lambs must weigh at least 70 percent of projected mature weight.
2. Ewe lambs must be managed as a separate flock for proper nutrition and ram attention.
3. Ewe lambs are shy breeders.
4. Ewe lambs may exhibit estrus for only 6 to 18 hours.
5. Extra care must be given to the ewe at lambing time.
6. Special attention must be given to the ewe's nutrition after they wean their first lambs.

Ewe lambs can reach puberty from 5 to 12 months of age. Puberty is the age when the animal becomes physically mature for sexual reproduction. Puberty is influenced by size, genetics, weather, nutrition, date of birth, breed and the presence of a ram.

Puberty in the female is exhibited by the first heat period (estrus). Estrus occurs in cycles of time and varies from species to species and even slightly from animal to animal within a species. The length of estrus averages 30 to 35 hours but can be 20 to 42 hours long. Ovulation or the discharge of an egg occurs late in this period. Estrus occurs every 16 days, on the average. With most sheep breeds, estrus begins to occur with high fertility as the day's length begins to shorten in September, October and November.

After a ewe conceives, it takes approximately 147 days for the lamb(s) to develop and be born. This time in development is called gestation. "An easy rule of thumb to keep: Gestation takes five months for sheep".

Credit: "Managing the Replacement Ewe Lamb." Iowa Cooperative Extension Service, Iowa State University.

UNIT - SHEEP PRODUCTION

Lesson 4: Managing the Flock from Lambing to Weaning

Objective: The student will manage a flock from lambing to weaning.

Study Questions

1. **What facilities, equipment and supplies are needed at lambing time?**
2. **How should a ewe be prepared for lambing?**
3. **What assistance should be provided at lambing time?**
4. **What care should a newborn lamb receive?**
5. **What care should a ewe receive after lambing?**
6. **When and how should lambs be vaccinated, docked and castrated?**
7. **What are the advantages of creep feeding?**
8. **When and how should lambs be started on creep feeding?**

References

1. Ricketts, G. E.; R. D. Scoggins; D. L. Thomas. Recommendations for a Sheep Management Program (publication 240). North Central Regional Extension. Chapters: "Ewe Management During Gestation"; "Ewe Management During Lambing and Lactation"; "Feeding and Management of Lambs to Weaning"; "Sheep Health Management"
2. Handout
   a) HO 4.1: Lambing Preparation and Castration

UNIT - SHEEP PRODUCTION

Lesson 4: Managing the Flock from Lambing to Weaning

TEACHING PROCEDURES

A. Review

Review the previous lesson on sheep breeding and gestation. Mention the planning needed for breeding and gestation and the importance of preparation as the shepherd looks ahead to lambing time.

B. Motivation

Bring in a week-old lamb, preferably a bottle baby. Ask students to determine the lamb's breed, sex and approximate age. Allow only one student other than yourself to handle the lamb. Gentleness and self-control are important in handling sheep, especially newborn lambs.

Weigh the lamb in the classroom using hanging scales with sling or bucket, or use a bathroom scale. On a posterboard, draw a life size outline or silhouette of a market-ready lamb five months of age, weighing 100 to 110 pounds. Place the newborn lamb in front of the drawing. Compare the size difference. Talk about the lamb's growth and the need for good nutrition, good health and proper management.

C. Assignment

D. Supervised study

E. Discussion

1. One way to minimize losses at lambing time is to be prepared with proper housing and equipment. Newborn lambs need a healthy start to avoid sickness, setbacks and losses. The shepherd should be equipped to meet the needs of the ewe and her lambs. Ask students to list the characteristics of a good lambing facility. Ask them to list additional supplies that should be available during lambing.

What facilities, equipment and supplies are needed at lambing time?

a) Facilities
   1) The barn or shelter should be of adequate size.
   2) The facility should be clean, dry and well ventilated, but not drafty.
   3) Electricity and water should be available.

b) Equipment and supplies
   1) Individual lambing pen requirements
      (a) Clean fresh water
      (b) Individual hay rack
      (c) Small feed trough

(d) Clean, fresh bedding
(e) Heat lamp with safety shield

2) Clean towels
3) Disinfected scissors
4) Seven percent tincture of iodine solution
5) Scales
6) Production records
7) Bucket for washing
8) Liquid or disinfectant soap
9) Lamb saver device
10) Vaccination supplies

2. The pregnant ewes are carrying the future of your flock. They should be properly cared for and managed for a successful lambing season. Discuss with students how to prepare a ewe before lambing. Discuss the signs that indicate lambing time is near.

How should a ewe be prepared for lambing?

a) If ewes are not shorn before lambing, they should at least be crutched. Crutching means to shear the udder, between the legs and around the dock.
b) The ewe flock should be checked several times each day for two weeks before the estimated start of lambing.
c) Check the ewe's udders for hard lumps indicative of previous udder damage.
d) Have plenty of space available for ewes to exercise.

NOTE: Lambing time is near when the pregnant ewe refuses to eat, has a full udder, has a fluid discharge from the vulva, has a swollen vulva, is nervous and uneasy and has a sunken area in front of her hips.

3. Lambing time is an exciting time for the shepherd. Proper assistance should be provided for the ewe during lambing. Ask the class why a shepherd would need to assist a ewe and how he could be of assistance.

What assistance should be provided at lambing time?

a) Assistance should be given to the ewe only if the need arises. Give the ewe ample time to deliver the lambs on her own.
b) Entry into the ewe may be necessary if abnormal conditions exist during delivery, such as the following.
   1) Leg(s) back
   2) Head back
   3) Breech birth - hind end coming first
   4) Upside down or crosswise birth
   5) Lambs tangled in multiple births
c) Assist the ewe in positioning a lamb with the front feet and nose together and coming first.
d) Do not pull hard on a lamb being delivered as injury may result to the ewe.

e) Allow the ewe to clean her newborn lamb.
f) Open the ewe's teat canals of the wax plugs by stripping a squirt or two of milk from each teat.
g) Make sure the lamb nurses soon after birth. The first milk, or colostrum, is most important for the lamb to help combat diseases and infections.
h) Watch the ewe and her lambs to insure their well-being.

4. A newborn lamb should be able to stand within an hour after being born, but there are a lot of things that need to take place within that first hour of life. Ask students if any have witnessed an animal's birth. How was the newborn cared for? What precautions were taken? What do they remember most vividly about the birth?

What care should a newborn lamb receive?

a) The lamb's airway should be cleared by using your finger to remove mucous from the lamb's mouth.
b) Make sure lambs receive colostrum or first milk soon after birth.
c) Apply iodine to the lamb's navel cord.
d) Give lambs clostridium CD antitoxin if the ewes were not vaccinated.
e) Inject the lambs with vitamin E and selenium.
f) Check the lamb's eyes for inverted eyelids.
g) Use a heat lamp, if needed, to dry lambs. Do not overuse.
h) Place lamb and ewe in a lambing pen for one to three full days.
i) Soon after birth, identify each lamb with a permanent ear tag or tattoo.

5. The ewe needs special attention after lambing. Her health and ownership of the lamb will help avoid major problems for the shepherd as he cares for the flock. Ask the class what care a ewe should receive after lambing. Consider her health, feed and condition.

What care should a ewe receive after lambing?

a) Allow the ewe plenty of fresh, clean water after lambing.
b) Gradually introduce grain to her diet. Feed the ewe high-quality roughage.
c) Make sure she passes her placenta, or afterbirth, and dispose of it properly.
d) Watch her closely along with her lamb.

6. The reason sheep can be so productive is because of special care and good management by the shepherd. Within the first few days of life, a newborn lamb undergoes at least one operation and is vaccinated against several diseases. Ask students why they think lambs need to be docked. What are the advantages of docking? What are the advantages of castrating ram lambs? Is vaccinating lambs cost effective?

When and how should lambs be vaccinated, docked and castrated?

a) Vaccinations
   1) If ewes were not vaccinated, give lambs clostridium CD antitoxin at lambing time.
   2) Inject lambs with vitamin E and selenium soon after lambing to prevent white muscle disease.
   3) Vaccinate inside elbow on bare skin at docking time if sore mouth has been a problem.
   4) Vaccinate for tetanus at docking time.
   5) Thirty days after lambing, vaccinate lambs with clostridium CD toxoid. Give a booster two to four weeks later.

b) Docking
   1) Lambs may be docked when they are removed from the lambing pen or between three to ten days of age.
   2) Use the following procedures to dock lambs.
      (a) Several equipment choices exist for docking.
         (1) Pocket knife
         (2) Burdizzo
         (3) Elastrator (rubber bands)
         (4) All-in-one
         (5) Emasculator
         (6) Electric docker
         (7) Hot iron or hot chisel
      (b) Cut off the lamb's tail at the second joint, approximately one inch from the body at the junction or end of caudal folds on the underside of the tail.
      (c) Push the skin of the tail toward the body before cutting to allow for loose skin to cover the wound.

c) Castration
   1) A decision should be made about which ram lambs to castrate.
   2) The lambs may be castrated at docking time.
   3) Castration can be performed by one of several tools.
      (a) Elastrator
      (b) Pocket knife
      (c) Burdizzo
      (d) Emasculator
      (e) All-in-one

7. Eating grain should be encouraged for maximum growth and weight gain. Creep feeding helps make eating grain easy for the lambs. Ask students if they have ever creep fed animals. What is the reason for creep feeding?

What are the advantages of creep feeding?

a) Growth is maximized since the lamb's most efficient growth occurs in the lamb's first two to three months of life.
b) Creep feeding increases weight gains, especially for lambs from multiple births.

c) Mothers cannot eat the lamb's feed, allowing for ample feed for the young.
d) Special rations may be fed to the lambs.
e) Creep fed lambs can be marketed at a younger age.
f) Earlier marketing usually means higher prices per pound for lambs born early in the lambing period.
g) Early lambs can be sold without being put on pasture.
h) Creep fed lambs are easier to wean.

8. After a few days the newborn lamb is very good at nursing. The ewe's milk is the lamb's main source of nutrition for the first few weeks. Lambs will begin to nibble grain as early as four days of age. Ask the class what possible problems may exist in starting lambs feeding from a creep feeder. What is the best way to get the lambs started?

When and how should lambs be started on creep feeding?

a) Set up the creep when the first lambs are born.
b) Put the creep in a convenient location close to the brood flock.
c) Have openings in at least two sides of the creep.
d) Have several openings on a side.
e) Keep the creep clean and well-bedded.
f) Place a light over the creep.
g) Provide fresh, clean water in the creep or as close as possible.
h) Change uneaten grain at least daily.
i) Clean feed troughs daily.
j) Begin lambs on a palatable ration.
k) Feed troughs should be raised off the floor.

F. Other activities

1. View any of the following video tapes available from your county cooperative extension agent.

"Baby Lamb Survival".
"Sheep Handling and Feeding Equipment"
"Harvesting Your Wool Crop"

2. Invite a veterinarian to discuss lambing, possible problems and solutions.

3. Prepare a display of docking and castrating equipment.

4. Observe and practice docking, castrating, ear tagging, tattooing or vaccinating lambs.

5. Design a checklist of items needed for lambing. Distribute the list to interested individuals.

6. Construct a lambing pen, hay rack and water holder that could be used for ewes at lambing.

7. Visit a local sheep producer's flock during lambing season.

8. Select students to present oral or written reports on feeding, management or housing of sheep.

G. Conclusion

Lambing season is an exciting time of year for the sheep producer. Much preparation and attention is required before, during and after lambing. It is the producer's responsibility that each lamb gets off to a good start.

H. Competency

Manage a flock from lambing to weaning.

I. Answers to Evaluation

Competency: Manage a flock from lambing to weaning. VAMS (0198 H004)

1. d
2. e
3. c
4. a
5. c
6. b
7. b
8. b
9. e
10. c

UNIT - SHEEP PRODUCTION Name_____

Lesson 4: Managing the Flock from Lambing to Weaning Date_____

Competency: Manage a flock from lambing to weaning.

EVALUATION

Circle the letter that corresponds to the best answer.

1. Which of the following is <u>not</u> an appropriate sign that lambing time is near for the bred ewe?

   a. The ewe has a full udder
   b. Nervous and uneasy ewe
   c. Sunken area in front of the hips
   d. Ewe has a big appetite
   e. Fluid discharge from the vulva

2. A sheep facility should be _____.

   a. Clean, with all sides enclosed
   b. Clean, dry, and drafty
   c. Cool, damp, and well ventilated
   d. Dark, dry, and cozy
   e. Clean, dry, and well ventilated

3. Which of the following would <u>least</u> likely be used at lambing time?

   a. Vaccination supplies
   b. Liquid/disinfectant soap
   c. Hoof trimmers
   d. Disinfected scissors
   e. Iodine solution

4. Which part of the lamb is presented first in a <u>breech</u> birth?

   a. Hind end
   b. Front hooves
   c. Knees
   d. Nose
   e. Chest

5. The first milk of a ewe that has given birth is called _____?

   a. Mastitis
   b. Clostridium
   c. Colostrum
   d. Butterfat
   e. Selenium

6. What type of solution should be applied to the lambs navel cord in order to prevent infection?

   a. Alcohol
   b. 7% tincture of iodine
   c. Hot soapy water
   d. 7% hydrogen peroxide
   e. Udder wash

7. Which of the following is accurate concerning the use of a heat lamp following the birth of the lamb?

   a. Keep the heat lamp on newborn lambs at all times.
   b. The heat lamp helps to warm and dry the lambs.
   c. Heat lamps should hang about 8" above lambs.
   d. No shield is necessary on a heat lamp.
   e. A heat lamp gives off ultra violet light.

8. At what age should lambs be docked?

   a. 1 day
   b. 7 days
   c. 18 days
   d. 21 days
   e. 30 days

9. A castrated ram is called a _____.

   a. Shoat
   b. Gelding
   c. Cryptor chid
   d. Buck
   e. Whether

10. Which of the following castration tools causes the scrotum and testicles to wither and drop off in a matter of days?

   a. Burdizzo
   b. Pocket knife
   c. Elastrator
   d. Emasculator
   e. All-in-one

LAMBING PREPARATION AND CASTRATION

Facility, Equipment and Supply Needs for Lambing

Lambing typically occurs during the cold season. Newborn lambs can easily die if unprotected from the elements. The ewe flock should be checked several times each day for two weeks before the estimated start of lambing. Lambing time is near when the pregnant ewe refuses to eat, has a full udder, has a fluid discharge from the vulva, has a swollen vulva, is nervous and uneasy and has a sunken area in front of her hips.

When the producer is checking the ewe flock he also needs to check on facilities, equipment and supplies. The sheep producer in Missouri can avoid losses during lambing time by providing proper facilities, equipment and supplies.

The sheep shelter or barn should be of adequate size for the ewes and their lambs. The Midwest Plan Service recommends at least 15 to 20 square feet of floor space per ewe. The housing should be clean, dry and well-ventilated, but not drafty. For convenience the facility should be serviced with both water and electricity.

Ewes are placed into lambing pens just before or immediately after lambing. Lambing pens are also known as cubicles, jails or jugs. They can be made from 1 inch wood or from plywood and are hinged together for flexibility and easy storage. Pens should measure 5' by 5' or 4' by 6'. The pen prevents the ewes from leaving the lamb(s) and keeps the lamb(s) from straying. The size of the pen encourages the ewe to accept the lamb. Lambing pens are usually set up in the barn along a side wall or in the corners.

The ewe and her lamb(s) can be kept in the lambing pen for two to three days, depending on the circumstances of health, space and acceptance of the lamb by the ewe.

An intermediate pen is utilized by some producers as the next step from the lambing pen. Upon release from the lambing pen, all ewes and their lambs are placed together in a sizable pen, or community pen. This is done to encourage the ewes to continue owning and nursing the lambs yet provide space for movement and exercise.

A pail of clean, fresh water; an individual hay rack; and a small feed trough should be available to the ewe in each lambing pen. All feeding and watering equipment should be portable for easy removal from the pen for cleaning and disinfecting. Because of the possibility of the newborn lamb drowning, water should not be given to the ewes in shallow buckets or pans. Each lambing pen should be bedded with clean, fresh straw or other suitable material.

A heat lamp is often used over each pen in cold weather and is situated 8 to 12 inches above the ewe's head height. The lamp should not be overused. Its only job is to aid in warming and drying the newborn lamb. Up to eight hours of use is generally sufficient.

Clean towels are sometimes used to help dry the lamb after being "owned" or licked by the ewe. The toweling of a lamb also aids in warming the lamb by stimulating the blood flow. Avoid excessive handling of the lamb.

Sharp, disinfected scissors are used to snip the navel cord to approximately 1 inch in length. After snipping the navel cord, a 7 percent tincture of iodine solution is used to disinfect the navel. Pour 1/2 to 1 inch of iodine solution into a wide mouth container such as a small paper cup. Pick up the lamb and place the container over the navel. Tip the lamb and container so the navel is saturated with the iodine solution.

Scales should be on hand to weigh the lambs the day of birth. The birth weight, sex, whether the lamb is a single or twin and other such information should be recorded on the production record.

Some precautionary equipment or supplies may be needed, should the ewe experience problems at lambing. Cleanliness is required. A bucket of warm water is helpful. Liquid soap or a disinfectant soap is used to clean the shepherd's hands and the sheep's vulva. The shepherd should have closely trimmed finger nails so as not to injure the ewe's reproductive tract.

A device called a lamb saver is available commercially. It is used to pull the lamb at delivery. It is made of a hollow plastic tube with a loop cable attached. The loop is passed behind the lamb's head and the tube under the lamb's chin. The cable and tube are pulled to help move the head as the front feet are being pulled for ease of delivery.

Many producers have vaccination supplies on hand at lambing. Supplies include disposable needles and syringes, as well as vaccines such as tetanus antitoxin, clostridium CD antitoxin, injectable vitamin E and selenium.

Ram Lamb Castration

Castration is the removal of the testicles from a male animal. A castrated ram is called a wether and is generally raised for market purposes.

Ram lambs are typically docked and castrated on the same day in a two part procedure. It is recommended to castrate and dock lambs when they are three to 14 days old. If castration is not performed at docking time, the lambs should at least be castrated before they are six weeks of age. The process becomes more difficult and painful as the ram matures.

Castration should be performed on sunny, clear days. Warm or wet weather may invite infection and healing problems. Always perform castration before the fly season.

There are many acceptable methods of castrating lambs. One of several tools may be used for the procedure. The method used depends on the tool. Any tool used for castrating should be clean, disinfected and working properly. Some of the same tools used in docking are used for castrating lambs. Castrating tools include the burdizzo, pocket knife, elastrator, emasculator and the all-in-one.

Castration should be accomplished by two people. One person holds the lamb while the other carries out the procedure. The lamb should be held in a seated position. The front legs are held and locked under the hocks of the hind legs. The lambs back is held against the body of the holder. This position prohibits movement by the lamb and allows the tail and scrotum to be easily reached.

Burdizzo - No blood is drawn when using the burdizzo. The tool merely crushes the spermatic cord above the testicles. When properly performed, the crushed cord causes the testicles to shrivel and become useless. Each of the two cords must be crushed separately. For greater effectiveness each cord should be worked to one side of the scrotum before the burdizzo is used.

Pocket knife - The bottom third of the scrotum is cut off with a sharp knife. The testicles are pushed through the opening and pulled separately. Remove the testicles with special pliers, forceps or your teeth. When pulling the testicle with one hand, use the other hand to support the lamb's body at the base of the cord to prevent internal injury to the lamb.

Elastrator - The elastrator is a tool that stretches a special rubber ring. With the testicles in the scrotal sac, the rubber ring is stretched and placed at the base of the scrotum. The instrument is pulled and the ring slides onto the scrotum base. The rubber ring tightens and cuts off the blood supply to that part of the body. The scrotum and testicles should wither and drop off in seven to 10 days.

Emasculator - The emasculator is a tool which both crushes and cuts. The crushing action retards bleeding. The scrotum and testicles are removed in one process.

All-in-One Castrator - The all-in-one castrator is a pliers-like tool that has two cutting blades and serrated teeth at its tip for gripping. The scrotum is cut with the blades. The testicles are pushed through the opening and the serrated teeth are used to grip as each testicle is pulled. Support should be given against the lamb's body at the base of the testicle cord to prevent internal injury to the lamb.

Always remember to keep tools and the area sanitary. Use disinfected tools and antiseptic on the wounds to prevent infection. Use blood stopper where necessary. Clean, fresh bedding should be placed in the lamb's pen.

UNIT - SHEEP PRODUCTION

Lesson 5: Managing a Flock from Weaning to Market

Objective: The student will manage a flock from weaning to market.

Study Questions

1. **How and when is a lamb weaned from the ewe?**
2. **What care should weaned lambs receive?**
3. **Describe common methods of finishing lambs.**
4. **What are the marketing alternatives for lambs?**
5. **What care should ewes receive at weaning and until breeding?**
6. **What are the characteristics of ewes that should be culled?**
7. **When should sheep be sheared?**
8. **What care should be used in shearing sheep?**
9. **How should wool be cared for?**
10. **What are the marketing alternatives for wool?**

References

1. Ricketts, G. E.; R. D. Scoggins; D. L. Thomas. Recommendations for a Sheep Management Program (publication 240). North Central Regional Extension. Chapters: "Feeding from Weaning to Market"; "The 'In-and-Out' System of Lamb Management"; "Selecting Ewes and Rams"; "Lamb Marketing"; "Wool Production and Marketing"
2. Handout
   a) HO 5.1: Weaning to Market

UNIT - SHEEP PRODUCTION

Lesson 5: Managing a Flock from Weaning to Market

TEACHING PROCEDURES

A. Review

Develop a sketch of the previous lesson by dividing the first two months of the lamb's life into blocks of weeks and months. Place into the respective time frame those occurrences that have taken place. Birth, start of production records, docking, castration, creep feeder set-up, vaccinations and peak milk production of the ewe may be included.

B. Motivation

Bring in a tanned sheep hide and a newly shorn fleece. Lay them out side by side. Compare the hide and fleece in size, texture and uses. Discuss the uses of wool as a fabric.

C. Assignment

D. Supervised study

E. Discussion

1. Weaning is the process of complete removal of the mother's milk as a food from the lambs. It can occur naturally over time, or it can be forced for efficiency of production. The proper age to wean lambs depends upon the system of management being undertaken. Factors which influence the age of weaning include the season of birth (early or late), the percentage of multiple births, creep feeding, the availability of grain or pasture, parasite problems, predators, type of sheep raised and market prices. Ask students why weaning is necessary. Have them consider factors such as milk production of the ewe, growth rate of the lamb, space available, sex, size and feed efficiency.

How and when is a lamb weaned from the ewe?

a) Most lambs in the Midwest are weaned between two and three months of age.
b) Lambs should weigh at least 40 pounds at weaning.
c) Early weaning is recommended since the ewe's milk production usually reaches a peak at approximately four weeks after lambing.
d) A complete break or separation of the ewe from the lamb is the easiest and most effective weaning method.
e) Successful weaning depends on how well the lambs are eating the supplemental feed in the creep at the time of their weaning.

f) "Limit nurse" the lambs for a week before weaning, allowing the lambs to nurse only two to three times per day.
g) Use the "in-and-out" system of lamb management.

2. It is important that the lambs get a good start after being separated from the ewes. Weaning is a stressful time for lambs. Ask students what things can be done to reduce or remove post-weaning stress.

What care should weaned lambs receive?

a) Weigh and record lambs weight at weaning time.
b) Creep-fed lambs should continue to have creep ration during weaning.
c) Use high-quality feeds.
d) Keep lambs on full feed until they reach market weight.
e) Change ration gradually over a six to eight day period when a change is needed.
f) The lamb's ration should be approximately 16 percent protein.
g) Meet the salt and mineral needs of the lambs.
h) Sort lambs for size for better growth.
i) Vaccinate for enterotoxemia or overeating disease.
j) Deworm lambs.
k) Sell lambs when they reach market weight.

3. Special attention must be given to the proper feeding of lambs since the cost of feed is the largest single cost in sheep production. Formulating a ration for lambs can be complex. The proper nutrition for sheep include the nutrients of protein, carbohydrates, vitamins, minerals, fat and water. Discuss with students the difference between concentrates and roughages. Concentrates are feeds high in total digestible nutrients and low in fiber; roughages are high fiber feeds that furnish an inexpensive source of carbohydrates for sheep. Give examples of each. Distribute HO 5.1.

Describe common methods of finishing lambs.

a) Hand-feeding method
   1) Feed the lambs at regular intervals, usually two times daily, in the morning and late afternoon.
   2) Lambs may be fed in a trough or a bunk.
   3) Allow 12 to 16 linear inches of feed space per lamb.
   4) In hand-feeding lambs, there is little or no advantage to grinding the grains.
   5) The following are sample daily rations for lambs.
      (a) 1.5 to 1.7 pounds corn
          1.5 pounds high-quality alfalfa hay
          Mineral, free-choice
      (b) 1.5 to 1.7 pounds corn
          .1 pound soybean oil meal (SBOM)
          1.5 pounds grass hay
          Mineral, free-choice

(c) 1 pound corn or milo
.5 pound bran
.15 pound SBOM
1.5 pounds grass hay
Mineral, free choice

6) Mineral that is fed free-choice may be made up of equal parts steamed bonemeal or dicalcium phosphate, iodized salt, and feeding-grade limestone; or one part steamed bonemeal or dicalcium phosphate, one part iodized salt. Commercial mineral rations should be specified for sheep.
7) Grain and hay is fed separately.

b) Self-feeding method
1) Lambs may eat from a self-feeder at any time.
2) Rations are ground and mixed.
3) Rations consist of grain; hay or other roughage; molasses; and soybean oil meal.
4) Lambs should be started on 35 percent concentrates and 65 percent roughages. Finish ration contains 50 to 65 percent concentrates.
5) Self-feeding method permits the addition of antibiotics and additives.
6) One person can feed a greater number of lambs with the self-feeding method.
7) Allow 4 to 5 linear inches feeding space per lamb.
8) Maximum consumption of feed results in improved rate and efficiency of gain.

NOTE: Cost of rations and rate of gain should be discussed with this question. Additional information is given on HO 5.1.

4. In selecting an enterprise to enter, the prospective producer needs to search out and locate possible markets for potential products. Factors such as market location, marketing alternatives and variability of prices should be taken into account. How can wise marketing improve a producer's income?

What are the marketing alternatives for lambs?

a) Terminal markets
b) Producers' pool
c) Sale barns
d) Electronic marketing (tele-auction)
e) Direct to packer
f) Private sales locally

5. Lambs obtain nutrients from nursing the ewe and from the creep feed ration. High-quality hay is also creep fed to the lambs. While the lambs are gaining weight, the ewe's health and nutrition must also be maintained. Ask the class what care a ewe should receive at weaning and until the breeding season. (HO 5.1)

What care should ewes receive at weaning and until breeding?

a) All grain should be eliminated from the ewe's diet two weeks before weaning lambs.
b) Hay and water should be reduced three days before weaning.
c) Those ewes who have maintained milk flow for 24 hours after weaning may require special management to reduce milk flow.
d) Ewes should be fed low-quality roughage.
e) Before going to pasture, the ewes should be dewormed and have their feet trimmed.
f) Check ewes for udder problems and treat as needed.
g) Cull ewes that do not meet the flock's standards.

6. Just as much emphasis should be placed on the culling of livestock as on their selection. Standards for the flock are set by the shepherd or the owner. It is important that the flock progress in productivity. Progress is difficult or impossible with low-quality or sickly animals. Ask students to define in their own words the terms "cull" and "culling". Discuss what happens with a culled animal. (HO 5.1)

What are the characteristics of ewes that should be culled?

a) Bad udder
    1) Damaged teats
    2) Lumps
    3) Mastitis
    4) Blind "quarter"
b) Skipped pregnancy
c) Bad feet or legs
d) Jaw defects
    1) Bad teeth
    2) Poor mouth
e) Prolapsed uterus
f) Age beyond productivity
g) Non-productive - See production records.
h) Poor quality wool and dark fibers
i) Horns or scurs
j) Poor mothering ability
k) Poor milking ability
l) Sickly
m) Carrier of unwanted traits
    1) Inverted eyelids
    2) Skin folds
    3) Wool blindness

7. The flock's wool should be harvested carefully for the sake of the sheep and the income that is derived from the wool. Wool represents up to 20 percent of the gross income for a flock. Sheep may be sheared at any time under the right conditions. Ask students how they would determine the best time to shear sheep.

When should sheep be sheared?

a) Generally, sheep are shorn once a year, at a time when the weather is warming.
b) Ewes may be shorn before or after lambing.
NOTE: See advantages and disadvantages of shearing pregnant ewes in Recommendations for a Sheep Management Program.
c) Rams are shorn approximately 2 months before breeding.
d) Some sheep are shorn twice yearly depending on the climate and the management system.

8. Great care must be taken before, during and after the shearing process. Correct preparation of the sheep, the facility and storage can make a big difference in the quality of the wool. Check with students to see if anyone is experienced in sheep-shearing. What preparation is needed. What problems are common?

What care should be used in shearing sheep?

a) Sheep should be dry.
b) Sheep should be housed in a clean, dry area.
c) Sheep should be taken off feed and water at least 12 hours before shearing to reduce chances of injury or death due to suffocation.
d) Equipment should be arranged so that sheep are shorn on old carpeting or a wood platform or floor.
e) Hay, straw or shavings should be cleaned off the belly and legs before starting to shear.
f) Avoid second cuts, remove the fleece in one piece.
g) Remove all dung locks, tags and stained wool from the fleece, and bag them separately.
h) If there is a lot of hay, chaff or other matter in the neck area, remove this section of fleece and bag separately.
i) Bag black fleeces and fleeces with black fiber separately. Remove black face and leg wool from the fleece and bag with black fleece wool.

9. Good feeding and management contribute to the production of a quality wool crop as well as the inherited ability of the sheep to grow wool. The wool's quality and quantity is decreased by stress such as poor nutrition and sickness. It takes a full year to produce a wool crop. The investment should not be wasted by poor management, poor planning or haphazard treatment of the wool. Ask students to list reasons for proper handling and storage of perishable products. Do any of the reasons apply to wool?

How should wool be cared for?

a) After shearing each sheep, the fleece should be rolled and tied securely. Do not tie too tightly.
b) Tie each fleece with paper twine only.
c) Fleeces should be tied separately.

d) Be sure fleeces are not contaminated with plastic.
e) Store the tied fleeces in burlap wool bags in a clean, dry area that is protected from dust, dirt and rodents.
f) Do not store wool in a plastic or paper bag.

10. Selling your wool for the best price is important. A higher price per pound not only means a larger check from the buyer but also a larger wool incentive payment from the government. Ask the class to consider the wool buyers. Who buys wool? How does a producer locate a buyer?

What are the marketing alternatives for wool?

a) Wool pool - Wool producers from a county or general area gather at a specified date and place to sell to a buyer.
b) Direct to buyer - Arrangements are made by the wool grower to sell to a buyer on a large or small scale. Buyer may represent a large company or a local spinner.
c) Consignment to wool marketing cooperatives - The wool cooperative serves as a marketing agent and will make an advance payment to you. Your wool is sold for you at the optimum time according to their expert judgment.

NOTE: The final step in wool production is applying for incentive payments at the county ASCS office. Contact your county office for necessary information if you are not familiar with the incentive program. The program is financed by tariffs on wool and wool products imported to the U.S. Your payment will be based on the price you received for wool. The higher the price you receive, the higher the incentive payment.

F. Other activities

1. Prepare a display of equipment used in shearing and hoof trimming.

2. Demonstrate sheep shearing.

3. Invite a local wool producer to speak about wool--its grading, storage and weaving.

4. Collect samples of wool grades.

5. Create a bulletin board for the school on sheep shearing and wool.

6. Send for the poster, 'How to Shear Sheep,' from Oster.

7. Follow and chart the lamb market and/or wool market.

8. View "Harvesting Your Wool Crop" which is a video tape available from your county cooperative extension agent.

G. Conclusion

Upon weaning, each lamb grows toward either market or breeding. The lamb's production of meat and wool generates income for the sheep producer. Both commodities can be marketed by several methods.

H. Competency

Manage a flock from weaning to market.

F. Answers to Evaluation

Competency: Manage a flock from weaning to market. VAMS (0198 H005)

1. d
2. c
3. b
4. b
5. d
6. e
7. b
8. c
9. d
10. a

UNIT - SHEEP PRODUCTION Name_____

Lesson 5: Managing a Flock from Weaning to Market Date_____

Competency: Manage a flock from weaning to market.

EVALUATION

Circle the letter that corresponds to the best letter.

1. Lambs should weigh at least _____ pounds at weaning.

   a. 10
   b. 20
   c. 30
   d. 40
   e. 50

2. At what age are lamb generally weaned in the Midwest?

   a. 2 weeks
   b. 4 weeks
   c. 10 weeks
   d. 6 months
   e. 12 months

3. A lamb's ration should be about _____ protein.

   a. 3%
   b. 16%
   c. 25%
   d. 35%
   e. 50%

4. Which method of feeding involves feeding the lambs at regular intervals; usually two times daily?

   a. Flush feeding
   b. Hand feeding
   c. Self feeding
   d. Creep feeding
   e. Full feeding

5. Which of the marketing alternatives involves selling lambs from producers to a large processor without a middleman?

   a. Terminal market
   b. Tele-action
   c. Sale barns
   d. Direct to packer
   e. Private sales locally

6. What part of a ewes ration is eliminated two weeks before weaning lambs from ewes?

   a. Protein supplement
   b. Water
   c. Hay
   d. Salt
   e. Grain

7. Which of the following would probably <u>not</u> be criteria for culling a ewe from the flock?

   a. Damaged teats
   b. Tick infestation
   c. Prolapsed uterus
   d. Poor mothering ability
   e. Bad feet

8. Which of the following would <u>not</u> be an appropriate condition in shearing sheep?

   a. Sheep should be dry.
   b. Sheep should be housed in a clean area.
   c. Sheep should be well fed prior to shearing.
   d. Sheep should be shorn on a wood floor or platform.
   e. Second cuts should be avoided in shearing.

9. Wool should be properly stored in a _____.

   a. Plastic garbage bag
   b. Large paper bag
   c. Plastic grain bag
   d. Burlap bag
   e. Netted onion sack

10. What method of marketing wool involves a group of producers selling wool to a specific buyer at a specified date and place?

   a. Wool pool
   b. Direct to buyer
   c. Consignment
   d. Terminal market
   e. Tele-auction

Finishing Lambs

Proper nutrition is important in raising any kind of livestock. The objective is to produce a high-quality product efficiently and economically. It is possible to feed too little or too much. Both extremes will cause problems in producing lambs for market or future breeding.

Feed cost is the largest single cost in sheep production. Special attention must be given to both feed quality and quantity.

Proper nutrition for sheep includes the nutrients of protein, carbohydrates, vitamins, minerals, fat and water. Feed can be in the form of concentrates or roughages. In feeding lambs, both concentrates and roughages are needed for good growth and steady weight gains.

Concentrates are feeds that are high in digestible nutrients and low in fiber. Concentrate examples include the following:

1. Grains (oats, corn, barley, wheat, rye)
2. Grain by-products (wheat bran, wheat middlings)
3. Molasses (cane, beet)
4. Oil meals (cottonseed, linseed meal, soybean meal)
5. Animal products (meat scraps, tankage, fish meal)

Roughages are feeds high in fiber. They furnish an inexpensive source of carbohydrates for sheep. Examples of roughages would include the following:

1. Dry roughages
   a) Hays (grass and legume)
   b) Hulls (peanut and cotton seed)
   c) Straw (oat, wheat, barley)
   d) Fodder (corn and sorghum)
   e) Pasture grasses
   f) Clovers
2. Green roughages
   a) Grasses
   b) Legumes
   c) Fodder
   d) Sorghums
3. Haylage or silage (made from green grasses and grain crops that are cut and stored in a silo)

The basic methods of feeding lambs include hand-feeding and self-feeding. The hand-feeding method is the feeding of lambs at regular intervals. Lambs are usually fed twice each day from a trough or a bunk. Twelve to 16 linear inches of feed space should be allotted per lamb. There is little or no advantage to grinding grains in hand-feeding lambs. Sample rations for hand-feeding follow.

1. 1.5 to 1.7 pounds corn
   1.5 pounds high-quality alfalfa hay
   Mineral, free-choice
2. 1.5 to 1.7 pounds corn
   .1 pound soybean oil meal (SBOM)
   1.5 pounds grass hay
   Mineral, free-choice
3. 1 pound corn or milo
   .5 pound bran
   .15 pound SBOM
   1.5 pounds grass hay
   Mineral, free choice

Free-choice mineral may be made up of equal parts steamed bonemeal or dicalcium phosphate, iodized salt and feeding-grade limestone; or one part steamed bonemeal or dicalcium phosphate, one part iodized salt.

Self-feeding allows the lambs to feed at any time. The rations for self-feeding are ground and mixed. A ration would consist of grain, hay or other roughage, molasses and soybean oil meal. Lambs are usually started on 35 percent concentrates and 65 percent roughages.

The self-feeding method allows for easy addition of antibiotics and additives. One person can feed a greater number of lambs through self-feeding. Four to 5 linear inches per lamb is required. The maximum consumption of feed results in improved rate and efficiency of gain.

The best ration produces the desired product most economically. Ration and feed costs per pound of gain vary depending on costs of concentrates and roughages used. The feeder usually selects those feeds available at the least possible cost.

Lambs should gain approximately 1/2 pound or more each day. Rapid gaining animals usually make the most efficient use of feed and can be marketed at a younger age. Digestive disorders can result if lambs are allowed to eat too much.

Care of the Ewe at Weaning Time

By the time the lambs are weaned, the ewes may look thin and worn out. It is normal for a ewe to lose some weight in mothering her lambs. Every thrifty ewe nursing a lamb gives a great amount of energy. In doing so, her own body reserves are reduced.

The ewe is typically placed on a high level of nutrition by the sheep producer from the period six weeks before lambing until two weeks before weaning. Weaning causes a lot of stress for both the lamb and the ewe. As weaning time approaches, it is the responsibility of the sheep producer to reduce stress of the ewe.

To avoid possible udder problems, milk production is reduced by eliminating grain from her diet two weeks before the planned weaning date. Three days

before weaning, both hay and water is then reduced. Those ewes whose milk flow continues 24 hours after weaning may require special management to reduce milk flow.

Ewes are fed low-quality roughage and no concentrate. Before going to pasture, each ewe should have her feet trimmed and should be dewormed. The producer should check ewes for udder problems and treat the animals as needed. Ewes that do not meet the flock's standards should be culled.

Culling Ewes from the Flock

The productivity of a flock depends on the performance of each ewe. Those ewes that do not meet the standards of the flock are culled. Culling is just as important to success in sheep production as selection. Culling is the selling or the slaughtering of unwanted stock for the purpose of greater flock production. Productivity is difficult or impossible with low-quality, troublesome or sickly livestock.

The standards of the flock vary from flock to flock and are set by the producer. Information on each ewe is kept on production records and should be easily accessible for decision making. If records are not kept, the producer must rely on memory.

Characteristics that are frequently used as criteria for culling ewes involve production, health, appearance or age. Production or lack of production aspects involve skipped pregnancy, poor mothering ability, poor milking ability and non-production such as dead or weak lambs. Health aspects worth culling from a flock include bad udders, blind 'quarter', damaged teats, lumps or mastitis; bad feet or legs; broken teeth and poor mouth; prolapsed uterus; or general sickliness. Appearance aspects frequently culled by some producers include scurs or horns; and poor quality wool or black fibers in the wool. Sheep that are carriers of unwanted traits such as inverted eyelids, wool blindness and skin folds are culled as well.

Credits: Ross, James. "4-H Market Lamb Project" (Y469). UMC Extension Division.

Project 2000 for Agricultural Education - Sheep Production. Iowa State University.

UNIT - SHEEP PRODUCTION

Lesson 6: Parasites, Diseases and Predators

Objective: The student will determine proper prevention and/or control methods of common parasites, diseases and predators.

Study Questions

1. **What are the common internal parasites and their prevention and/or control?**

2. **What are the common external parasites and their prevention and/or control?**

3. **What are the common contagious diseases and their prevention and/or control?**

4. **What are the common non-contagious diseases and their prevention and/or control?**

5. **How can sheep predators be controlled?**

References

1. Ricketts, G. E.; R. D. Scoggins; D. L. Thomas. Recommendations for a Sheep Management Program (publication 240). North Central Regional Extension. Chapters: "Sheep Health Management"; "Common Sheep Diseases"; "Parasite Control"; "Foot Health"

2. Handout

   a) HO 6.1: Parasite and Predator Control

3. Transparency Masters

   a) TM 6.1: Deworming Methods
   b) TM 6.2: External Parasites of Sheep

UNIT - SHEEP PRODUCTION

Lesson 6: Diseases, Parasites and Predators

TEACHING PROCEDURES

A. Review

Review the previous lesson.

B. Motivation

Obtain specimens of internal and external sheep parasites from your local veterinarian. Allow students to view them closely. Explain to students that sheep are quite susceptible to parasites. Discuss the need for a proper management and routine deworming program.

C. Assignment

D. Supervised study

E. Discussion

1. Controlling internal parasites in sheep is a never-ending battle. Sheep are very susceptible because of the nature of their grazing. The most effective way to control parasites is to interrupt their life cycle and thereby prevent infective larvae from gaining access to the sheep. Ask the students to list reasons why parasite control is important to the livelihood of the flock. Use TM 6.1.

   What are the common internal parasites and their prevention and/or control?

   a) Common internal parasites
      1) Round worms
      2) Tapeworms
      3) Liver flukes
      4) Coccidia
      5) Lungworm
   b) Proper management - the key to preventing and controlling internal parasites
      1) Keep all newly purchased sheep separate from the flock until you are assured they are clean of internal parasites.
      2) A routine deworming program needs to be followed. Deworming medicines may be administered in the following methods.
         (a) Trace mineral mix
         (b) Feed additives
         (c) Water additives
         (d) Drench solutions
         (e) Injection

(f) Paste
(g) Bolus or pill

3) Water, feed and pasture needs to be managed properly.
4) Only three deworming medicines are presently approved for control of internal parasites in sheep.
(a) Phenothiazine
(b) Thiabendazole
(c) Tramisol

2. External parasites can seriously influence the productivity of the flock. Ask students to distinguish between internal and external parasites. Use TM 6.2.

What are the common external parasites and their prevention and/or control?

a) Common external parasites
1) Ticks
2) Keds
3) Lice
4) Mites
5) Wool maggots and blow flies
6) Screwworm
7) Nose bots

b) Good management - the key to preventing and controlling external parasites
1) All newly purchased sheep should be isolated from the flock and treated to assure the absence of external parasites.
2) There are various methods of controlling or preventing external parasites.
(a) Pressure applied sprays
(b) Dusts
(c) Pour on liquids
(d) Dipping

NOTE: Nose or head bots are the larvae of a non-biting fly. The adult flies annoy sheep when they deposit live maggots in or around the sheep's nostrils. The maggots crawl up the nasal passages and come to rest in the sinus passage. Mature maggots retrace their route and are sneezed out onto the ground. They later emerge as flies. The entire life cycle of the nose bot ranges from six months to one year depending on the climate. Sheep are severely bothered by the bots. Ivomec is used for control of the bot. Management may help to control the nose bot through sanitation practices. Consult your local veterinarian for advice.

3. A shepherd should be familiar with sheep diseases and symptoms. Briefly discuss with students the importance of basic disease control measures of sanitation, quarantine of new animals, isolation of sick animals, testing for disease presence, culling of infected animals, proper nutrition, vaccinations and proper management. How can these affect the health of the flock?

What are the common contagious diseases and their prevention and/or control?

a) Pneumonia
   1) Clean the barn to the bare ground and spread limestone before adding fresh bedding.
   2) Shear ewes before lambing and add sulfa drugs to their water or antibiotics to their feed.
   3) Use nasal spray of parainfluenza vaccine before lambing.
   4) Individual treatment depends on the causative agent in the flock. Check with your local veterinarian for advice.

b) Lamb Scours
   1) Provide a clean, dry, well-bedding area for lambs.
   2) Wash the ewe's udder with soap and water before lambs nurse.
   3) Prelamb shearing of ewes aids in prevention.
   4) Lambs need early, adequate intake of fresh, clean colostrum.
   5) Sick lambs should be isolated with their mothers.

c) Mastitis - occurs in milk-producing ewes
   1) Put moist hot packs on udder.
   2) Do frequent milking/stripping into a container, not onto bedding.
   3) Inject antibiotics orally or into the teat canal as directed.
   4) Avoid over-crowding.
   5) Avoid soremouth in lambs.
   6) Avoid troughs or door sills that may injure udders.
   7) Prelamb shearing allows better observation of udders and earlier detection of udder problems.

d) Soremouth - prevented by using a commercially available live vaccine

e) Foot Rot
   1) Inspect all feet of all sheep in the flock.
   2) A control program should be initiated.
   3) Trim all feet of every sheep and treat in a footbath.
   4) Identify affected sheep and isolate.
   5) Retreat affected sheep.
   6) Inspect affected sheep every two weeks.
   7) Place recovered sheep in a convalescent band.
   8) Return sheep to flock after two clean inspections.
   9) Treatment of the infected band should continue.
   10) Inspect the clean flock twice.
   11) Isolate new sheep and pass two inspections 30 days apart before being introduced into the flock.
   12) Clean sheep must go to a pasture that has had no sheep on it for at least two weeks.
   13) Systemic antibiotics are sometimes necessary.
   14) Vaccinate if contagious foot rot is identified. Check with local veterinarian.

4. Non-contagious diseases in sheep are serious income-eaters. The best sheep and lambs are often the ones affected. Discuss with students the difference between a contagious and non-contagious disease. Which is more serious?

What are the common non-contagious diseases and their prevention and/or control?

a) Tetanus or Lockjaw
   1) Use tetanus antitoxin after all injuries and surgical procedures.
   2) Administer toxoid to all animals on an annual basis during the last 30 days of pregnancy.
   3) Use 7 percent iodine on docking and castration wounds.
   4) Promptly attend to all wounds.

b) Overeating diseases
   1) Clostridium - E Coli Complex is controlled by vaccinating with CD toxoid three to six weeks before lambing or using CD antitoxin on lambs at birth.
   2) Enterotoxemia
      (a) Type C - Immunize pregnant ewes in last 30 days of pregnancy. Wash the ewe's udder and your hands when helping lambs to first nurse.
      (b) Type D (Pulpy Kidney Disease) Use type D toxoid in vaccinating lambs at 30 days of age and follow with a booster after two weeks. Replacements and show lambs receive additional booster at six months of age.

c) White Muscle Disease - Inject lambs subcutaneously with selenium-Vitamin E at birth and again at 30 days of age.

d) Urinary Calculi - Male sheep on high concentrate rations are especially susceptible to urinary calculi.
   1) Proper management is essential.
   2) A clean and fresh water supply must be maintained.
   3) Feed ration should contain two parts calcium to one part phosphorus.

e) Ketosis or Pregnancy Toxemia - Ketosis is a metabolic disease which occurs during the last six weeks of pregnancy. It is caused by the rapid growth of the fetus(es) and the ewe's decreased capacity for feed intake.
   1) Prevention is best accomplished by supplying an adequate energy source to pregnant ewes during the last four to six weeks of pregnancy.
   2) Avoid any physical stress, sudden changes of feed or activities that will alter feed requirements during pregnancy.
   3) Treatment is effective if initiated in the very earliest stages.
   4) Two ounces of propylene glycol, given orally three to four times daily, provides a concentrated source of energy.
   5) Inducing birth is the most effective treatment.

5. Sheep are relatively defenseless. Predators are a major problem of sheep producers in the Midwest, as well as the range states. What is a predator? List possible predators of sheep.

How can sheep predators be controlled?

a) The main predators of sheep in Missouri are dogs and coyotes. However, bobcats, foxes, mountain lions, occasionally bear and even eagles have been known to attack sheep.
b) Dog and coyote damage can be reduced by using one or a combination of the following methods.
   1) Electric fence or anticoyote fence
   2) Traps set in strategic locations
   3) Trained guard dogs
   4) Sheep raised in confinement
   5) Sheep brought in from pasture at night
   6) Miscellaneous other deterrents

NOTE: Possible reference for the instructor: Recognizing and Reducing Sheep Predator Losses. Cooperative Extension Service, Iowa State University, Ames, Iowa 50011, 1983.

F. Other activities

1. Conduct a survey of local sheep producers to determine common health problems.

2. Prepare a bulletin board of sheep parasites and diseases.

3. Demonstrate how to trim sheep hooves.

4. Collect fecal samples from a local flock and take to veterinarian to determine parasite presence or absence.

5. Invite a veterinarian to speak on sheep health.

6. Appoint individuals to give reports on specific sheep diseases or parasites.

7. Demonstrate deworming procedure with sheep.

8. Collect articles on sheep predator control and attacks.

9. View video tapes available from cooperative extension office: "Flock Health" and "Applying Health Care Practices".

G. Conclusion

Sheep are very susceptible to a number of parasites, diseases and predators. Health problems, if not treated, are capable of destroying the flock. It is important for the sheep producer to identify problems and implement corrective measures.

H. Competency

Determine proper prevention and/or control methods of common parasites, diseases and predators.

I. Answers to Evaluation

Competency: Determine proper prevention and/or control methods of common parasites, diseases and predators. VAMS (9108 H006)

1. b
2. d
3. c
4. d
5. c
6. a
7. c
8. d
9. b
10. b

UNIT - SHEEP PRODUCTION Name_____

Lesson 6: Parasites, Diseases and Predators Date_____

Competency: Determine proper prevention and/or control methods of common parasites, diseases and predators.

EVALUATION

Circle the letter that corresponds to the best answer.

1. Which one of the following is considered an internal parasite?

   a. Screwworm
   b. Coccidia
   c. Mite
   d. Maggot

2. Treatment of internal parasites is best controlled with _____, along with proper management.

   a. Dusting
   b. Spraying
   c. Dipping
   d. Drenching

3. Which one of the following is considered an external parasite?

   a. Round worm
   b. Tape worm
   c. Ked
   d. Liver fluke

4. External parasites are best controlled by _____.

   a. Drenching
   b. Proper feed and water
   c. Pasture rotation
   d. Dusting

5. Mastitis infects which one of the following?

   a. Rams
   b. Wethers
   c. Milking ewes
   d. Lambs

6. Which one of the following diseases is contagious among sheep?

   a. Foot rot
   b. Overeating disease
   c. Ketosis
   d. Urinary calculi

7. Which one of the following sheep diseases is non-contagious?

   a. Lamb scours
   b. Pneumonia
   c. Ketosis
   d. Soremouth

8. Urinary calculi affects _____ on a high concentrate ration.

   a. Ewes
   b. Lambs
   c. Milking ewes
   d. Rams

9. The predators which cause the most problems with sheep are _____.

   a. Coyote and bear
   b. Coyote and dog
   c. Coyote and eagle
   d. Coyote and wolf

10. Sheep carcasses should be removed from pasture and _____ to deter any further attraction to the flock by predators.

   a. Thrown in a ditch
   b. Deeply buried
   c. Thrown in a river or pond
   d. Discarded

PARASITE AND PREDATOR CONTROL

Internal Parasite Control

Control of parasitism in sheep is dependent upon good management and cannot be accomplished with the indiscriminate use of drugs. Many control efforts have been aimed at breaking the life cycle of intestinal and stomach worms. Proper use of water, feed and pastures can effectively reduce parasitic problems.

Water - Keep watering areas dry and well-drained. Provide proper drainage of pastures to reduce standing water.

Feed - Clean feed troughs regularly. Do not feed sheep by placing feed directly on the ground. The pasture may be brought to the sheep in the form of green chop and fed in drylot feed bunks. Keep sheep well-fed. Poorly fed sheep are most susceptible to parasites.

Pasture - Do not overstock pastures. Place sheep on clean pastures after deworming. Clip pasture periodically to rid pasture of heavy shading forage. Shaded ground allows the soil to stay moist and parasite larvae to live. Use electric fence to section off clean pastures with flexibility. Bed sheep on high, dry ground and away from watering and wet areas. Lambs close to market weight should not be placed on pasture because they are more susceptible to parasites than older sheep. If pasturing is necessary, use clean, rested pastures.

Sheep and Predators

Predators are a major cause of lamb loss in the Midwest. Hundreds of thousands of dollars may be lost each year due to predators and their sheep kill.

Sheep are defenseless when attacked. Coyotes and dogs by far cause the most damage. However, bobcats, mountain lions, occasionally bears and even eagles have been known to prey on sheep, especially lambs.

There are several ways to reduce sheep lost to predators. Several management practices could be followed.

1. Bring the sheep in from pasture each evening. The flock can be attracted to a confined area using salt or feed. Over time they will come in automatically.
2. Coyote-proof fencing and electric fencing are available commercially and can be installed around the pasture.
3. Guard dogs are becoming popular among sheep producers to guard against attacks on sheep. Special breeds of dogs have been used for centuries in other countries. The dogs are trained to stay with the sheep at all times and to fight off any attackers.
4. Iron traps can be set outside the perimeter of the pasture. The traps are baited and scented to catch predators. Precautions should be taken as traps are hazardous to innocent others.

5. Humane coyote-getter traps may be helpful. The coyote-getter is a spring-loaded instrument that is buried in the ground and baited. When disturbed a chemical is shot into the coyote's mouth, poisoning the animal.
6. Other possible deterrents include bell collars, radios, scarecrows, dips, automatically timed noise makers, and placing with the sheep some livestock that are aggressive toward predators such as a cow with a calf, billy goat, horses or donkeys.

Should a sheep or lamb be lost to a predator, the carcass should be removed immediately from the area and deeply buried or burned. Carcasses left at pasture will invite more predator attacks.

If animals are attacked, first examine the evidence and try to detect what kind of animal killed or maimed the sheep. The signs of the attack differ with the attacker. Coyotes and wild animals kill for food. The lamb will be eaten beginning with the entrails, heart and other organs. Teeth marks will be evident around the face or throat. Dogs, on the other hand, may injure several sheep. The victims will be torn up, injured or maimed. Damage may be so severe that the sheep should be put out of its misery. Large patches of wool and skin are typically torn from the legs and flank by the dog. A dog that attacks and kills sheep can seldom be broken of the habit. It should be eliminated. Always check the local laws concerning dogs that attack sheep. Notify the authorities immediately to examine the damage.

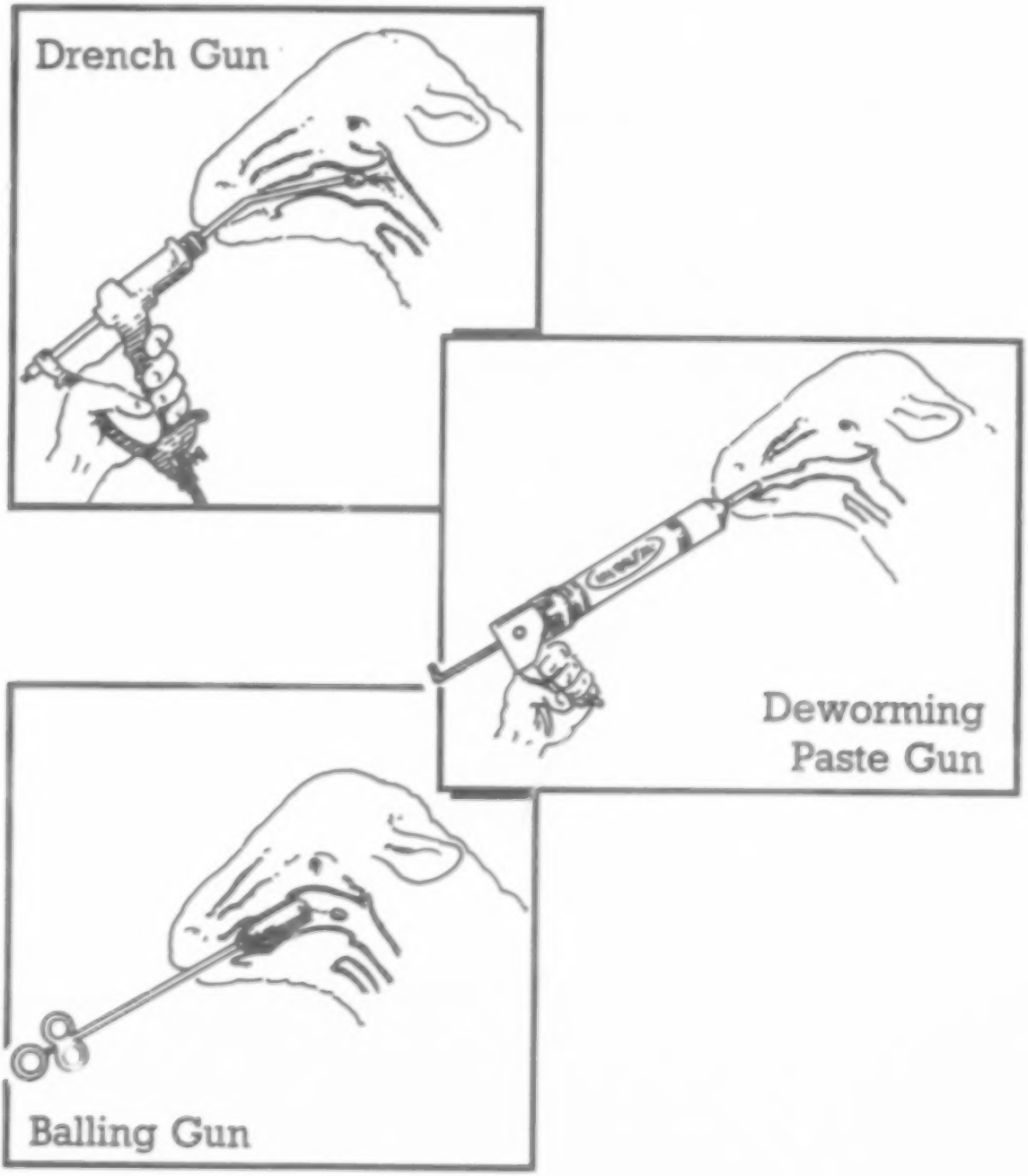
If a predator problem persists, seek help from other sheep producers and the sheep association. By working together, the problem is more apt to be solved.

Credits

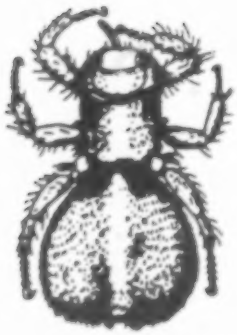
Adapted from "Controlling Predators," Approved Practices in Sheep Production. Juergenson, EM.

"Recognizing and Reducing Sheep Predator Losses." Cooperative Extension Service, Iowa State University.

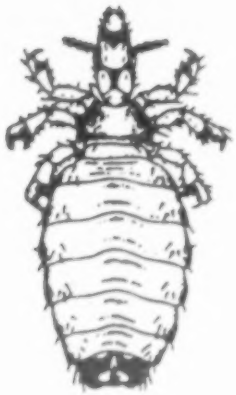
Deworming Methods



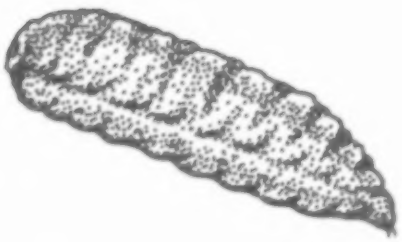
External Parasites of Sheep



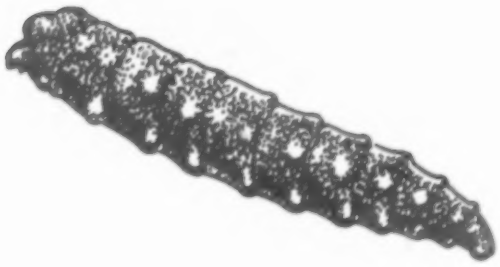
Sheep Keds (Ticks)



Louse

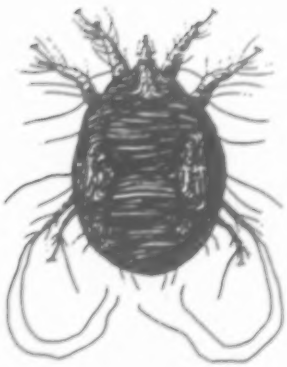


Nose Bot



Screw Worm

Wool Maggot (Blow Fly)



Mite

GLOSSARY OF SHEEP TERMS

afterbirth - the membranes expelled after the birth of the fetus.

aged sheep - a ram or ewe two years of age or older.

all-in-one - a tool that can be used for docking and castrating lambs having two cutting edges with toothed jaws.

ASPC - American Sheep Producers Council.

anthelmintics - a chemical used for reducing the number of internal parasites in an animal.

antibiotics - compounds which prevent or control varying degrees of infection.

ASCS - Agriculture Stabilization and Conservation Service.

barn record - lambing and weaning records kept by the shepherd usually in the barn.

black fiber - wool fibers dark or black in color usually considered undesirable because they cannot be bleached.

blood-line - an animal's family line of descent, ancestry, strain or pedigree.

body conformation - the structure, shape and build of an animal's body.

booster vaccination - a second or multiple vaccination given to increase an animal's resistance to a specific disease.

bred ewe - a ewe that is pregnant.

breech birth - birth of an offspring in which the hind feet of the offspring are presented first.

breed - (verb) to cause to reproduce; (noun) a genetic strain of a domestic animal having consistent and recognizable characteristics.

broken mouth - the mouth of a sheep that has lost part of the permanent incisors.

bummer - an orphan lamb.

bunk - an animal feed trough.

Burdizzo - a tool used to crush the blood vessels in the tail when docking and to crush spermatic cords when castrating.

castration - the removal of an animal's gonads.

carcass - the body of a slaughtered and gutted animal.

carcass merit - the relative worth of a carcass.

coccidiosis - a common intestinal infection of lambs caused by a single-celled organism called coccidia.

colostrum - the first milk a ewe produces after the birth of the lamb; high in antibodies.

commercial sheep enterprise - that business in which sheep are raised for meat and wool with no concern for registering offspring.

concentrate feed - feed containing less than 18 percent crude fiber when dry; grains and protein supplements are concentrates.

consignment - to entrust lambs, sheep or wool to an agent for sale.

contagious disease - a disease that is transmitted by direct or indirect contact, able to spread from one animal to another.

convalescent band - a group of animals that are recuperating from ill health.

creep feeder - a pen with openings sized to prohibit mature sheep from entering but allowing lambs to enter for feeding purposes.

crutch - (verb) to remove wool from the sheep's udder, between the legs, and around the dock.

cull - (verb) to eliminate an animal from the flock. (noun) an animal that does not meet the flock's standards and is sold or eliminated from the flock for production reasons.

dam - a female parent.

deworm - the process of controlling internal parasites in sheep.

dipping - the process of controlling external parasites of sheep by submerging the animal in a treated liquid.

direct-to-packer - the sale of sheep from a producer to a meat packer without a middleman.

dock - (noun) the stub end of a sheep's or lamb's tail.

docking - (verb) to remove the tail of a lamb.

dual purpose breed - sheep breeds selected for both meat and wool qualities.

dung locks - wool matted with manure or urine usually located between the legs and the dock area of sheep. Also termed as tags.

dust - dry, powdered materials used on sheep for control of external parasites.

ear tag - a metal or plastic tag attached to a sheep's ear for identification.

elastrator - an instrument used in docking and castrating lambs which stretches a special rubber ring and releases it over the tail or scrotum restricting blood flow. The tail or scrotum will wither and fall off in a matter of days.

electric docker - an instrument that is heated with electricity to red hot and used to cut the lamb's tail off. The high heat cauterizes blood vessels so there is little chance f infection.

emasculator - an instrument used for docking and castrating lambs that crushes the tissue before cutting. The crushing helps to crimp the blood vessels to reduce blood loss.

enterotoxemia - an overeating disease in sheep.

entrails - the internal organs.

estrous cycle - the period of time from the start of one estrus to the start of the next.

estrus - the time when the ewe is receptive to the ram. She will stand to mate and is able to conceive.

ewe - a female sheep.

ewe and ram directory - a listing put out by an association that lists sheep producers, the breeds raised and sometimes the availability of sheep for sale.

ewe breed - those breeds of sheep noted for maternal qualities.

ewe production record - record of an individual ewe with information of her past productive performance.

ewe-to-ram ratio - the ratio of the number of ewes in a flock per ram.

external parasites - an organism that grows and feeds on the skin of the host animal.

face wool - wool located on the face of the sheep; usually undesirable.

feed efficiency - the relative quality of how feed is utilized by an animal for maintenance and production.

feeder lamb - a lamb that is weaned and sold to be fed for more growth before being slaughtered.

fertility - the condition, state or quality of an animal capable of reproducing.

fetus - an unborn animal.

fine wool breed - sheep breeds with fine wool fiber diameters.

finishing - the act of feeding an animal to produce a desirable carcass for market, usually referring to deposition of fat on the animal.

flank - the region between the side of the sheep and the sheep's rear leg.

fleece - wool as it is shorn from the sheep. The fleece should remain in one piece.

flock - a group of sheep.

flushing - the practice of increasing the level of nutrition of ewes and rams before and during the breeding season for the purpose of increasing the chance of conception.

fodder - the above-ground part of nearly mature corn or sorghum in the fresh or cured form.

footbath - a liquid solution or dried mixture of chemicals used for the purpose of ridding a flock of foot problems.

foot rot - a highly contagious foot disease caused by bacteria.

free choice - feed that is available to the animal at any time.

gaunt - an emaciated animal; one that is thin and weak.

genetic characteristic - characteristics or traits carried on the genes of the animal which are capable of being inherited.

gestation - the time during which an animal is pregnant.

glean - to gather grain left after harvest.

grease wool - wool shorn from sheep before it has been cleaned.

growth rate - the rate of increase of an animal in muscle, bone, vital organs, and connective tissue as contrasted to fattening.

hand-feeding - the method of feeding set amounts of feed to livestock regularly.

haylage - low-moisture grass silage.

heat lamp - an infrared lamp that is used for drying and warming lambs immediately after birth.

heat period - laypersons term for estrous period, meaning the period during which the ewe will stand to be mounted and mated by a ram.

heat tolerance - the ability to withstand high temperatures.

hock - the tarsal joint of the leg.

hothouse lambs - lambs born in the fall or early winter and marketed directly after weaning when nine to sixteen weeks of age to a special market.

hulls - the dry outer covering of a seed, fruit or nut.

hybrid vigor - improvement in the offspring resulting from favorable combinations of gene pairs (heterosis). The offspring will perform better than the average of the two parents.

internal parasites - organisms which grow and feed inside the host animal.

inverted eyelid - the turning in of the margin of the eyelid (entropion).

keds - six-legged, blood-sucking parasites of sheep, also called "sheep ticks".

ketosis - pregnancy toxemia, a metabolic disease caused by rapid growth of the fetus and the ewe's decreased capacity for feed intake.

lactation - the period of time when a ewe is producing milk.

lamb - a young sheep or sheep meat from either sex under one year of age.

lamb saver - an instrument used to help deliver a lamb in a difficult birth. The instrument has a plastic coated cable which loops the lambs and allows for gentle pulling.

lamb scours - diarrhea of nursing lambs caused by bacteria.

lambing pen - a small pen used for keeping a ewe and her lambs immediately after birth.

larvae - immature stages of adult parasite, usually wormlike.

leptospirosis - a disease which is one cause of abortion in sheep.

lice - an external parasite of sheep affecting wool quality, weight gains and the general condition of the sheep.

life cycle - the time period of an organism's life from birth to death.

limit nurse - the process of allowing lambs to nurse their mothers for certain times and amounts in order to wean the young from the ewes.

liver fluke - a flat parasitic worm that lives in the bile ducts of an animal.

lock jaw - see tetanus.

loin - part of an animal's side and back between the ribs and hips.

longevity - being longlived and productive.

long wool breed - those sheep breeds having large diameter (coarse) wool fibers.

lungworm - an internal parasite of sheep.

maggot - the larva of various flies.

make-it-with-wool contest - a local, state or national competition in which individuals make articles of clothing or other items out of wool.

market weight - the weight at which an animal is slaughtered.

marking harness - a harness with a chalk or crayon marker worn by the ram during the breeding season. As the ram mounts a ewe for breeding the rump area of the ewe is marked.

mastitis - inflammation of the udder caused by bacteria.

meat type breed - those breeds of sheep noted for their rate of gain and carcass quality.

metabolic disease - a disease of the functioning of specific substances within a body.

milking ability - the ability to produce milk for the young.

Missouri Sheep Producers, Inc. - Missouri's statewide organization of sheep and wool producers.

mothering ability - the ability of being a good mother to the new born, demonstrating maternal instincts.

mutton - meat of a fully grown sheep greater than one year of age.

muzzle - the mouth part of a sheep.

nasal spray - a liquid sprayed up the nasal passage, a nasal spray is used to control nose bots in sheep.

NLFA - National Lamb Feeders Association.

non-contagious disease - a disease which is not spread from one to another, non-transmissible.

nose bot - maggot of a fly that enters the sheep's nose and lives in the sinuses.

NWGA - National Wool Growers Association.

oil meal - a feed ingredient processed from soybean, linseed or cottonseed, and generally used as a protein supplement.

open-faced - having no wool on the face, including the areas on the nose and around the eyes.

over stocking - placing too many animals on a given area at the same time.

ovulation - the process during which an egg is released from the ovary.

paint brand - marks, typically of numbers, pressed onto the sides or backs of sheep with a scourable paint for easy identification.

palatable ration - a feed that is easily eaten by animals.

paper twine - a twine made of wound paper used for tying fleeces.

pastern - the part of a sheep's foot just above the hoof.

poll - the top of the head.

polled - having no horns.

post-weaning stress - that stress on animals caused by the separation of offspring from the mothers.

pour-on-liquids - liquids poured onto sheep for the control of external parasites.

predator - an animal which preys on other animals.

pressure applied sprays - liquids, under pressure and sprayed onto animals, used for treating external parasites.

prolapsed uterus - a uterus that has fallen out or slipped out of place.

prolificacy - able to produce offspring in relatively great numbers.

pulpy kidney disease - another name for enterotoxemia.

purebred sheep - a sheep of a recognized breed kept pure for many generations. A purebred animal may or may not be registered, but all registered animals are purebred.

ram - a male sheep.

ration - feed fed to an animal.

rectal prolapse - a condition in which the rectum protrudes out of the anus, which can be caused by an excess of high concentrate feeds.

registration papers - certificate from a breed association verifying registry of an individual animal within the breed.

reproductive efficiency - the degree of ability to reproduce.

reproductive tract - the physiological tract of an animal in which offspring is conceived and born.

roughage - a feed containing more than 18% crude fiber when dry.

roundworm - a stomach worm parasitic to sheep.

saddle - the part of a meat animal's body including the top of the rump and loin area.

scours - diarrhea.

scrotum - the part of the male's reproductive system which acts as a sac to contain the testicles and the epididymis.

scurs - nub-like horns.

screw worm - the larval form of a fly which is parasitic to sheep and other livestock causing the condition known as flystrike.

seasonal breeder - ewes that only show estrus during part of the year, estrus season depends on decreasing day length, breed and climate.

second cuts - short bits of wool resulting from passing the shears twice over the same area in an effort to get close to the skin.

selenium - a metallic element.

self-fed - a method of feeding in which the animal is given free access to all the feed it will eat.

settling of the ewe - conception or becoming pregnant.

sex character - features that differentiate male from female other than the presence of sex organs.

shear - the removal of a sheep's fleece.

sheath - in mammal reproductive systems, a tubular fold of skin which covers the penis.

shepherd - a person who cares for and manages sheep.

shrinkage - the weight loss by an animal while it is being shipped to market.

silage - green forage plants that have been stored and fermented in a silo.

sire breed - those breeds of sheep that are meat type and generally used as sires for commercial flocks.

skin folds - folds caused by the excess of skin, usually undesirable.

soremouth - a disease of sheep caused by a pox virus which produces pustules and scabs on the face, ears, genitals and feet.

soundness - freedom from body defects.

spermatic cord - the protective sheath around the vas deferens.

spring lambs - lambs born in the springtime.

strip - to remove the last milk from the udder.

stud ram - a male sheep used for breeding.

subcutaneous injection - an injection given between the skin and the muscle.

susceptible - readily subject to and unresistant to a disease.

tags - dungy wool, see dung locks.

tapeworm - a ribbonlike worm that is an internal parasite of sheep and other vertebrates.

teaser ram - a ram that has had the vas deferens cut or tied (vasectomy). These rams can not impregnate ewes but have sex drive. (vasectomized ram).

teat - the outlet for milk produced in the udder.

teat canal - the canal inside the teat in which milk flows.

thigh - the upper leg muscle of an animal.

testicles - male gonads which produce the sperm.

tetanus - an often fatal infectious disease caused by a bacillus that generally enters the body through a wound. It is characterized by the animal being rigid, also called lockjaw.

tick - an eight legged bloodsucking external parasite of sheep.

tincture of iodine solution - a solution with a percentage of iodine used as a disinfectant for wounds.

trace mineral mix - a mixture of those minerals needed in trace amounts by the animal, usually given free choice to livestock.

trait - a seen or unseen characteristic of an animal.

udder - the milk producing glands of mammals.

undershot jaw - the condition in which the lower jaw is longer than the upper jaw, and the teeth extend forward past the dental pad on the upper jaw.

urinary calculi - calcium or phosphorus deposits which crystalize and obstruct the urinary tract.

vibriosis - a form of cholera to which sheep are susceptible.

vitamin E - one of a group of organic substances which in relatively small amounts is essential to life.

vulva - the external opening of the female reproductive and urinary systems.

wean - to eliminate mother's milk from the offspring's diet.

wether - a castrated ram.

white muscle disease - nutritional muscular dystrophy also known as stiff lamb disease.

wool bag - a bag, typically made of burlap, in which wool is placed and stored.

wool blindness - a condition where wool grows too close to the eyes, preventing the sheep from seeing.

wool grower - a person who raises sheep.

wool incentive payment - that payment received by a wool grower from the government for wool produced and sold.

wool pool - the organized gathering of wool growers for the purpose of selling their wool to one buyer.

yearling - a sheep of either sex that is approximately 1 to 2 years of age, or a sheep that has cut its first incisors.

yearling weight record - that account of a sheep's weight at one year of age.

yolk - the natural yellow grease in a fleece that keeps the wool in good condition, consists of wax plus suint.